Population and industrial change: a geographical approach Rossendale and Haut Beaujolais 1700 - 1880

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POPULATION AND INDUSTRIAL CHANGE:

A GEOGRAPHICAL APPROACH

ROSSENDALE AND HAUT BEAUJOLAIS 1700-1880.

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CONTENTS

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Finally my thanks to Mr G.N.G.Smith, Vice-Principal of Bede College, Durham for his constant support and encouragement, and above all to my wife, Ingela, as a source of inspiration and for never complaining during the many hours spent producing the final manuscript and typescript copies.

Solihull June 1973.

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Abstract

Rossendale and Haut Beaujolais in the pre-industrial period, were part of the domestic outwork system. This system based on hand spinning and weaving, provided a broad economic base in regions of limited agricultural potential, and produced distinctive geographic and demographic patterns. To some extent these patterns were modified by the introduction of the factory system and the large-scale expansion of industry, though there remained clear strands of continuity between the pre-industrial and industrial periods. Economic continuity is seen as largely inevitable in the early water power phase of industrialization. Later, with the development of steam power, the continuous growth of the textile industry in Haut Beaujolais, stretching back some two centuries or more, was severely disrupted. In contrast, Rossendale, with local deposits of coal, was able to accommodate technological change and retain its prosperity throughout the 19th century.

Introduction.

Localized groups engaged in industrial occupations in a rural setting have never attracted the same degree of attention as their urban counterparts or agrarian contemporaries. The literature relating to rural industries is sparse in the extreme. Not only is there a lack of detailed regional studies but a virtual absence of the models and theories found for example in modern urban and industrial studies. Texts dealing with the historical geography of Western Europe from the 15th century onwards contain few references and coverage, when compared with that relating to agricultural matters is almost always inadequate. From the geographer's point of view this situation can perhaps be attributed to two factors: first the influence of rural industry on the landscape has been far less important and far less apparent than that of previous agricultural systems; and second, very few documents relevant to this form of economic organization have survived for the period prior to industrialization, and indeed it is doubtful in most cases whether such documents existed at all. In spite of this, rural industry was an important sector of the economy of pre-industrial Europe and its geographical implications were far from inconsiderable.

Periods of change and discontinuity in human history have always attracted the attention of scholars and the industrial revolution is no exception. Yet though the literature of economic, social and demographic history relating to this period is vast there are few studies concerned with the origins and geographical implications of industrialization at a regional scale. In a sense this is surprising because the industrial revolution in Western Europe was very much a regional phenomenon - though its implications were national and its effects world-wide, industrialization actually originated in a handful of small, widely scattered regions which previously had often been

economically backward and remote from the main centres of national wealth. It would seem therefore that to understand fully the industrial revolution it is necessary to appreciate the relevant regional situation. The present study can be seen as a small contribution to this end. Its purpose is to look at industrialization in two of the oldest industrial regions in Western Europe - Rossendale in Lancashire and Haut Beaujolais in south-east France.

The basic method employed in the treatment of this subject is that of comparison. Rossendale and Haut Beaujolais were in many respects similar areas in the critical phases of incipient and early industrialization. Both were, in spatial terms, part of the wider economic system of the domestic textile industry; both occupy difficult and rather impoverished environments in an upland zone; both are in close proximity to important regional capitals - for most of the 18th and early 19th centuries Rossendale and Haut Beaujolais lay within the respective hinterlands of Manchester and Lyon. Beyond these major cities international links were possible through the ports of Liverpool and Marseille.

The value of comparative study derives from the fact that when dealing with two or more similar areas certain variables can be held constant and observed differences attributed to processes associated with dissimilar causal factors. If for example the history of population growth in two similar regions before 1801 were very different then it would be reasonable to search for causal explanation in those elements of the set of possible causal factors which were either different or not contained in the comparative set. As a rather more ambitious aim it might be hoped that the study of similar regions would make possible the construction of an empirical model that could later be tested in relation to other regions. This is not to imply that a convincing model can be built on the basis of data gathered

for two small regions: merely that the posing of important questions, the analysis of problems and the formulation of hypotheses will provide a sort of theory for looking at other regions.

While confering certain advantages, comparative studies are not without their problems. First it is debatable to what degree 'similar regions' exist and to what extent every region is a unique areal class. The implicit assumption of this study is that geography is a nomothetic rather than an idiographic discipline. However, a more fundamental problem is the danger of comparison becoming analogy and the distortion of reality in an effort to see similarities where none exists. Another set of problems concerns the comparability of data. This becomes a crucial problem when the areas of study are drawn, as in this instance, from different political units. Further difficulties arise when these international comparisons are viewed in the historical context and at periods which were largely pre-statistical.

The historical geographer is faced, with the advent of quantitative geography with considerable methodological problems. The nature of these problems became increasingly clear in the search for a meaningful framework for this study. Whereas most branches of geography are primarily concerned with the single dimension of space, historical geography is fundamentally two dimensional in its concern with spatial change through time. Harvey[1] suggests a classification of temporal modes of explanation into those that consider time as a continuous variable and those that consider time as a discrete variable. Historical narrative belongs to the first class and is the weakest form of temporal explanation. The most common means of over-coming the continuous nature of time and of avoiding a narrative

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1 D.Harvey: "Explanation in Geography." 1969 p 421

approach is to divide time into a series of arbitrary stages recognised by the operation of some genetic process. The adherents to landscape evolution as a theme in historical geography frequently use this mode of explanation, often taking selected years where the data permit and reconstructing past landscapes in static slices of time. Because of limitations imposed by fragmentary documentary sources such an approach cannot be entirely avoided here. However, as far as possible in this study explanation is attempted using the broad framework of systems theory. Hitherto this has been a little used paradigm in historical geography.

By definition a system is a functioning, dynamic unit operating both in space and through time. Traditional approaches to historical geography have always sought to reduce time to some static condition thereby simplifying the highly complex time-space continuum. If this approach is unsatisfactory and fails to meet demands set by the new geography it is nevertheless understandable as an attempt to reduce the complexity of historical data to meaningful order. This study recognises two principal systems:

(1) the system which comprises the set of elements within the selected regions of study. This regional system includes elements of traditional regional geography such as the physical environment, population and settlement.

(2) the economic system. This is the industrial system of the textile industry in both regions. The delimitation of its spatial extent would form a functional region.

This study is primarily concerned with the inter-action of these two systems through time and of the spatial consequences of change produced by changing socio-economic inputs into the regional system. If economic systems remain stable through time then we can define time by reference to the dominant processes operating in that

system. This is particularly useful in a comparative study of this type where there is a discrepancy in the chronology of economic development between the two regions. The industrial revolution in France did not really get under way until the mid 19th century whereas in Britain "take off" occurred more than half a century before. Thus to compare situations and events in Rossendale and Haut Beaujolais purely in the context of the time scale would be meaningless.

The scale of this study is sub-regional for both Rossendale and Beaujolais form parts of wider, homogeneous units. Data have been collected on a local scale: the processes of change and patterns of development become obscured and nebulous at any larger scale and in order to understand the industrial revolution it would appear most fruitful to observe change in the smallest detail and later develop generalizations relevant to the regional scale.

The first part of the study is devoted to the pre-industrial phase. This was the period dominated by the domestic textile system. After brief consideration of the physical geography of Rossendale and Beaujolais in chapter 1 the domestic textile system and the way it functioned is discussed in chapter 2. The response of elements in the regional systems (especially population) to this high order economic system is then considered in chapters 3 to 5. Part two begins with a definition and description of the new factory system, and the ensuing chapters (7 and 8) deal with impact of this system on existing geographical patterns as well as the geographical implications of the decline of the domestic textile system.

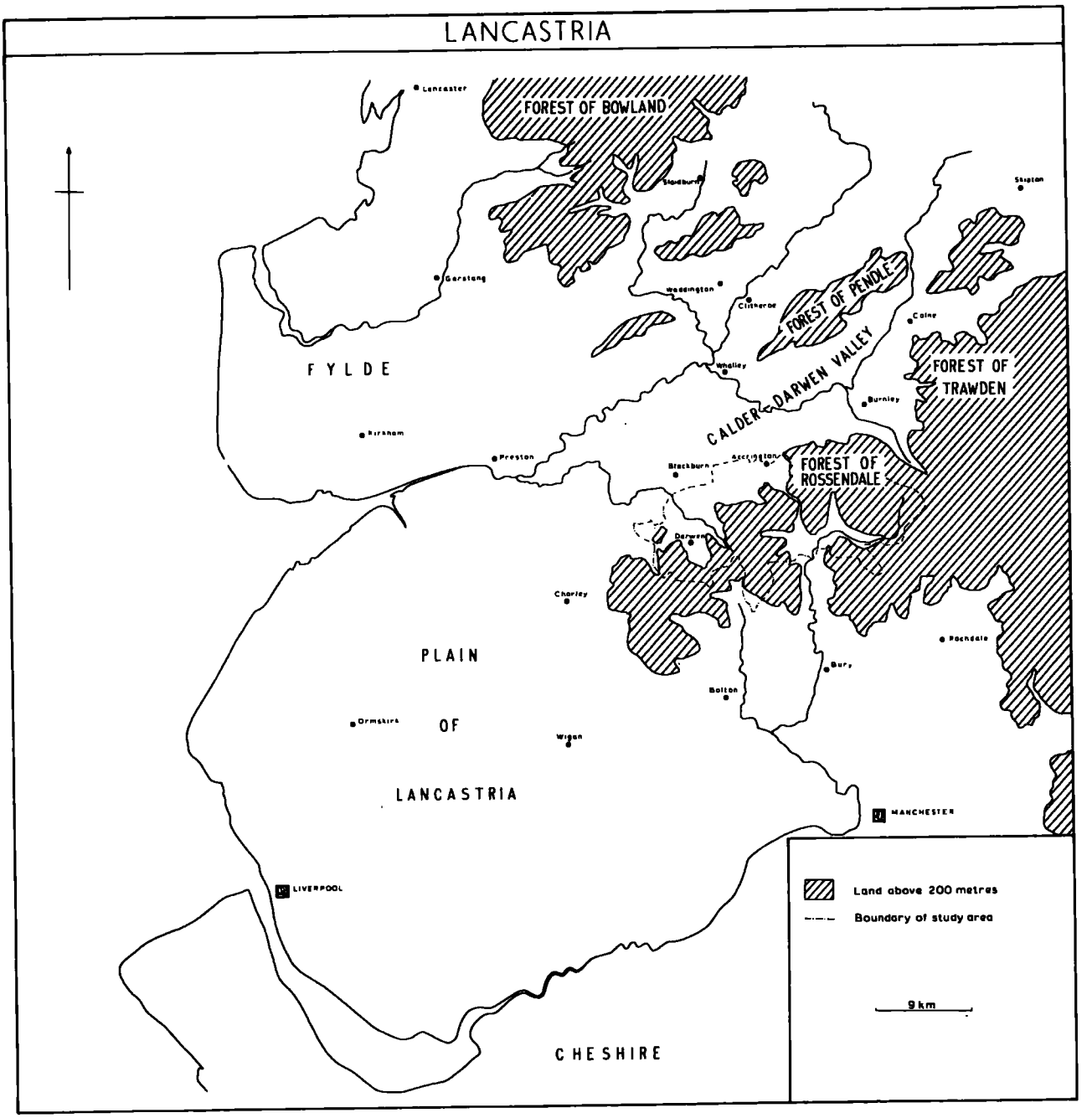
LANCASTRIA
Lancaster
FOREST OF BOWLAND
Skipton
Garstang
Waddington
Clitheroe
FOREST OF PENDLE
Colne
FYLDE
Whalley
FOREST OF TRAWDEN
CALDER-DARWEN VALLEY
Burnley
Preston
Blackburn
Accrington
FOREST OF ROSSENDALE
Chorley
Rochdale
PLAIN
Bury
Bolton
OF
Wigan
LANCASTRIA
MANCHESTER
LIVERPOOL
CHESHIRE
Land above 200 metres
Boundary of study area
9 km

Fig. 1.1

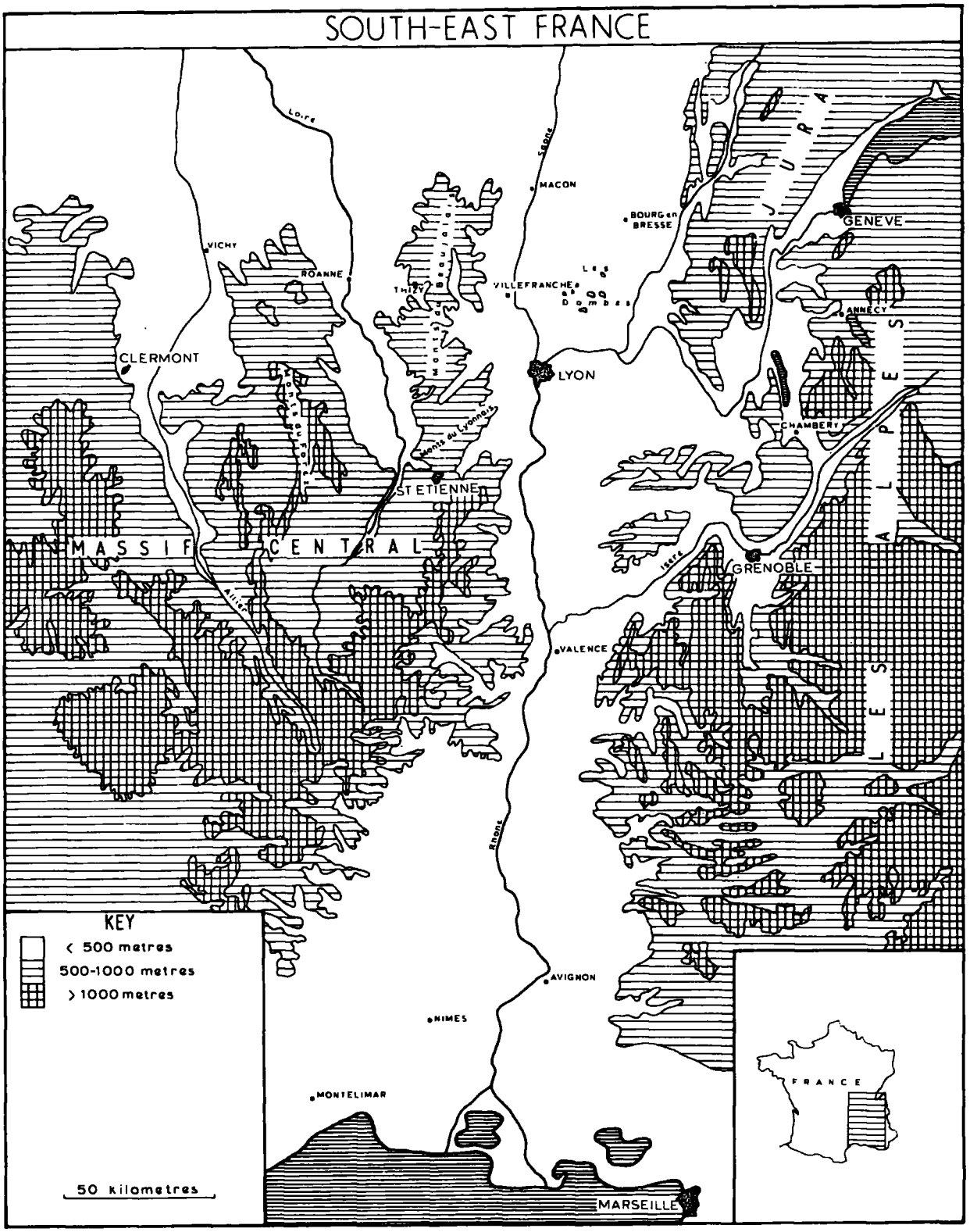
SOUTH-EAST FRANCE
Loire
Saône
MACON
BOURG en BRESSE
GENEVE
JURA
VICHY
ROANNE
VILLEFRANCHE
Les Dombes
ANNECY
ALPES
CLERMONT
LYON
CHAMBERY
ST ETIENNE
MASSIF CENTRAL
Isère
GRENOBLE
VALENCE
Rhone
AVIGNON
NIMES
MONTELIMAR
MARSEILLE
KEY
< 500 metres
500-1000 metres
> 1000 metres
50 kilometres
FRANCE

Fig. 1.2

Chapter 1: PHYSICAL GEOGRAPHY.

(1.1) Definitions of Study Areas: the two principal areas of study are Rossendale in Central Lancashire and Haut Beaujolais in the western fringes of the departement of the Rhone. Rigid boundaries are not delimited for each area as neither Rossendale nor Haut Beaujolais are formal regions but part of wider upland regions of the western Pennines and the north-east Massif Central respectively. In many respects this study might be regarded as a sample study of similar but more extensive regions.

There is by no means unanimity in the literature as to the area covered by the name Rossendale. However, the boundaries of the mediaeval chase and Forest of Rossendale were fairly clear and have been adopted by Tupling and other writers.[1] The forest included the greater part of the townships of Haslingden, Musbury, Henheads, Dunnockshaw, Higher Booths, Lower Booths, Newchurch and Cowpe/Lench/Newhallhey and these eight units form the core of the study area. The name Rossendale is often used in the literature to refer to the extensive hill mass that projects westwards from the Pennine monocline and forms a simple anticlinal structure between the Calder-Darwen syncline to the north and the Manchester Embayment to the south. The area defined as Rossendale for the purposes of this study is a compromise which includes the whole of the area of the ancient forest as well as the lowland area of the Darwen Valley. This latter area consists of the townships of Over Darwen, Lower Darwen and Eccleshill situated in the Darwen Valley itself, Yate and Pickup Bank on the watershed area between Haslingden and Over Darwen which separates the Irwell and Darwen drainage basins and

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[1] G.Tupling: "The Economic History of Rossendale." 1927

G.North: "Industrial Development in the Rossendale Valley." Jrnl of Manchester Geog. Soc. 58 1962 pp 13-29.

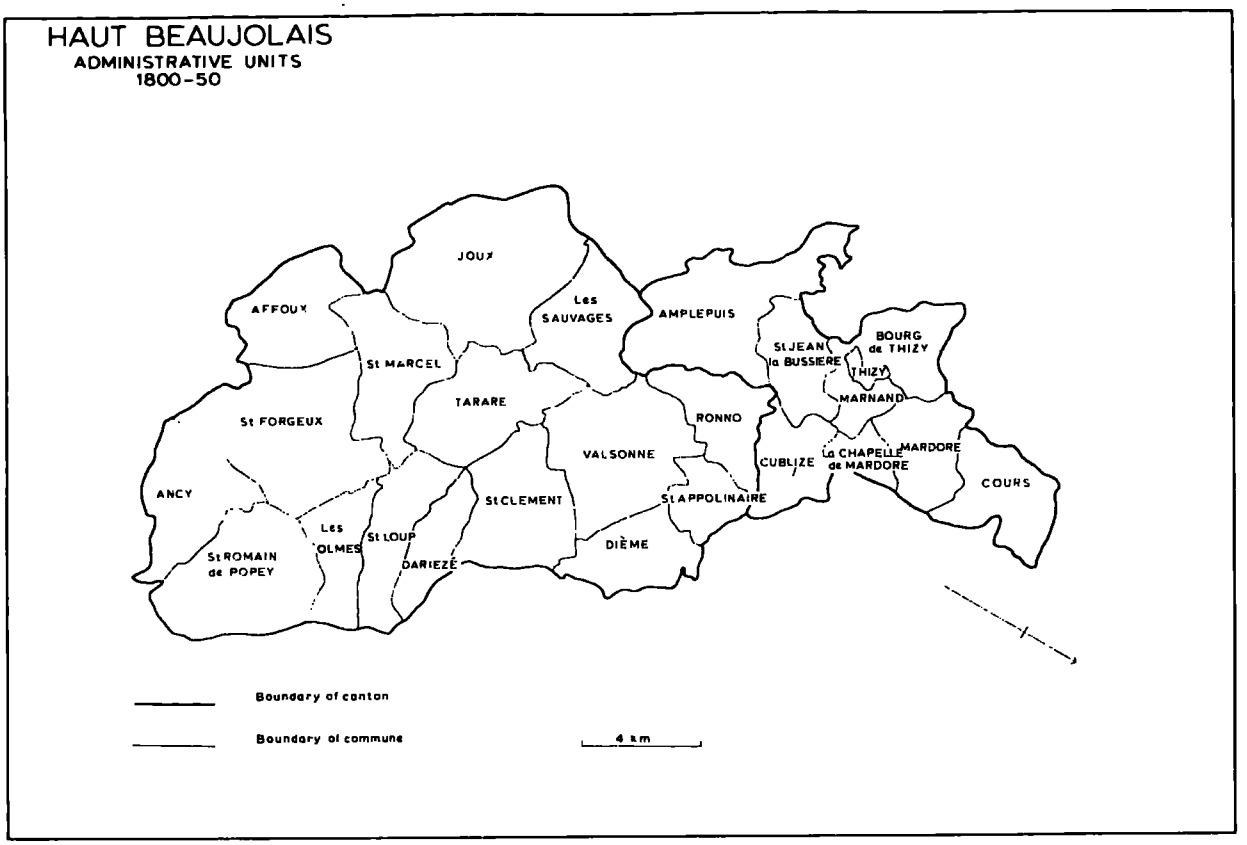

Fig. 1.3a

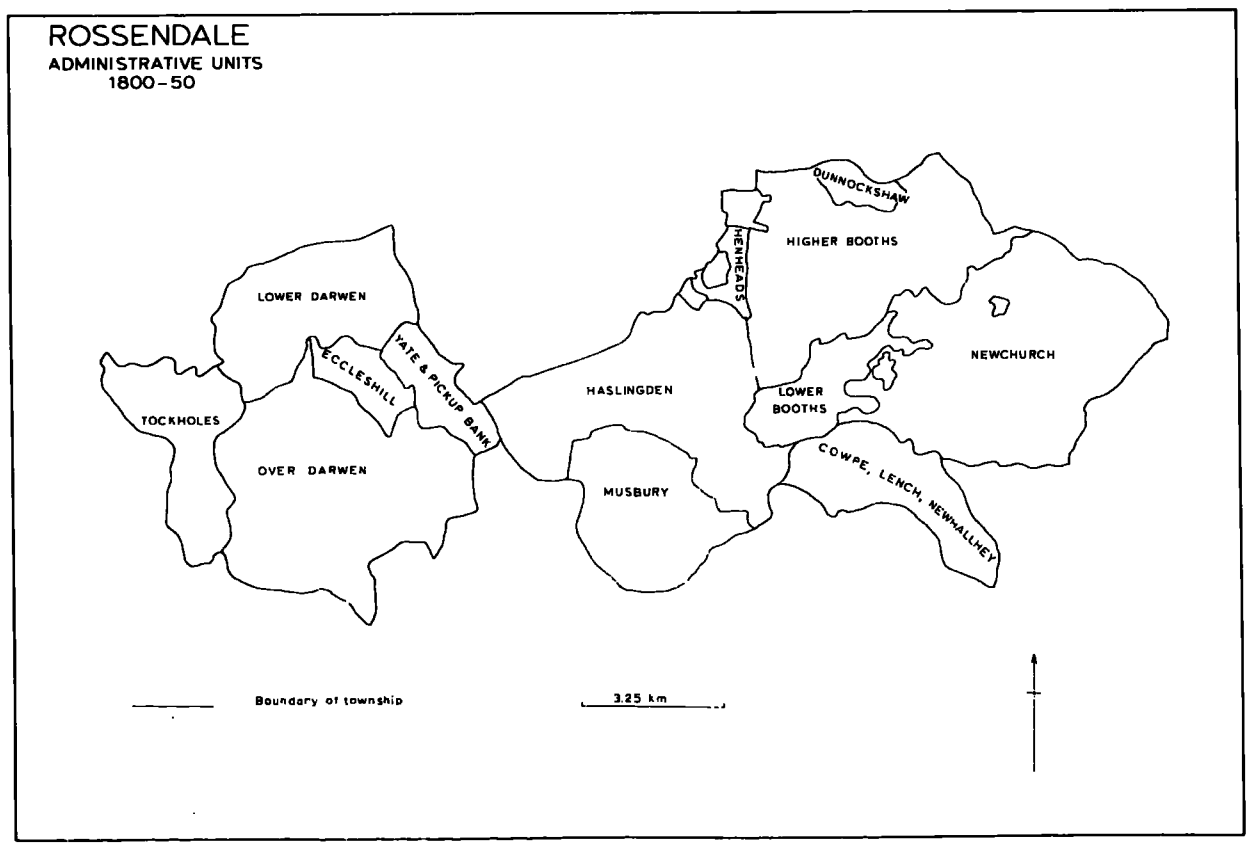

Fig. 1.3b

Tockholes located on the extreme western edge of the Rossendale Massif. These thirteen townships form the statistical units around which one half of this study is based, and throughout the text it is to this comparatively small area that the name Rossendale refers. (see figure 1.3b).

There exists almost equal confusion in the literature in the definition of Haut Beaujolais. J-M.Rousset[2] refers to this region as the Massif de Tarare and gives the name Haut Beaujolais to the mountainous area lying to the north-west of Beaujeu and extending to the boundary which separates the départements of the Rhône and Saône et Loire. Cholley[3] adopts almost the same definition though he places the southern boundary of the region a little further south at Villefranche-sur-Saône. The earliest geographical publication relating to Beaujolais defines Haut Beaujolais as the area centred on the Reins, Trambouze and Azergues valleys.[4](see figure 1.4a). J-P.Houssel[5] employs a similar definition except for his exclusion of the Azergues Valley. It is this definition that is used here, comprising the two cantons of Thizy and Amplepuis[6]. The area is situated to the west of the Saône-Loire watershed and lies wholly within the Loire drainage basin.(figure 1.3a). Haut Beaujolais

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2 J-M.Rousset: "Nouvelle Géographie du Département du Rhône et de la Région Lyonnaise." 1932 p 41.

3 A.Cholley: "Notes de Géographie Beaujolaise." Annales de Géographie 38 1929 p 30.

4 L.Gallois: "Macônnais, Charolais, Beaujolais, Lyonnais." Annales de Géographie 2 1895 p 294.

5 J-P.Houssel: "Les Petites Villes Textiles du Haut Beaujolais." Rev.de Geogr.de Lyon 46 1971 pp 123-197.

6 The canton of Thizy includes the communes of: Bourg de Thizy, Chapelle de Mardore, Cours, Mardore, Marnand, St Jean la Bussière, and Thizy. Amplepuis was part of the canton until 1866 when it became chef-lieu of its own canton which comprised the communes of Amplepuis, Ronno, Cublize, Meaux and St Vincent des Reins.

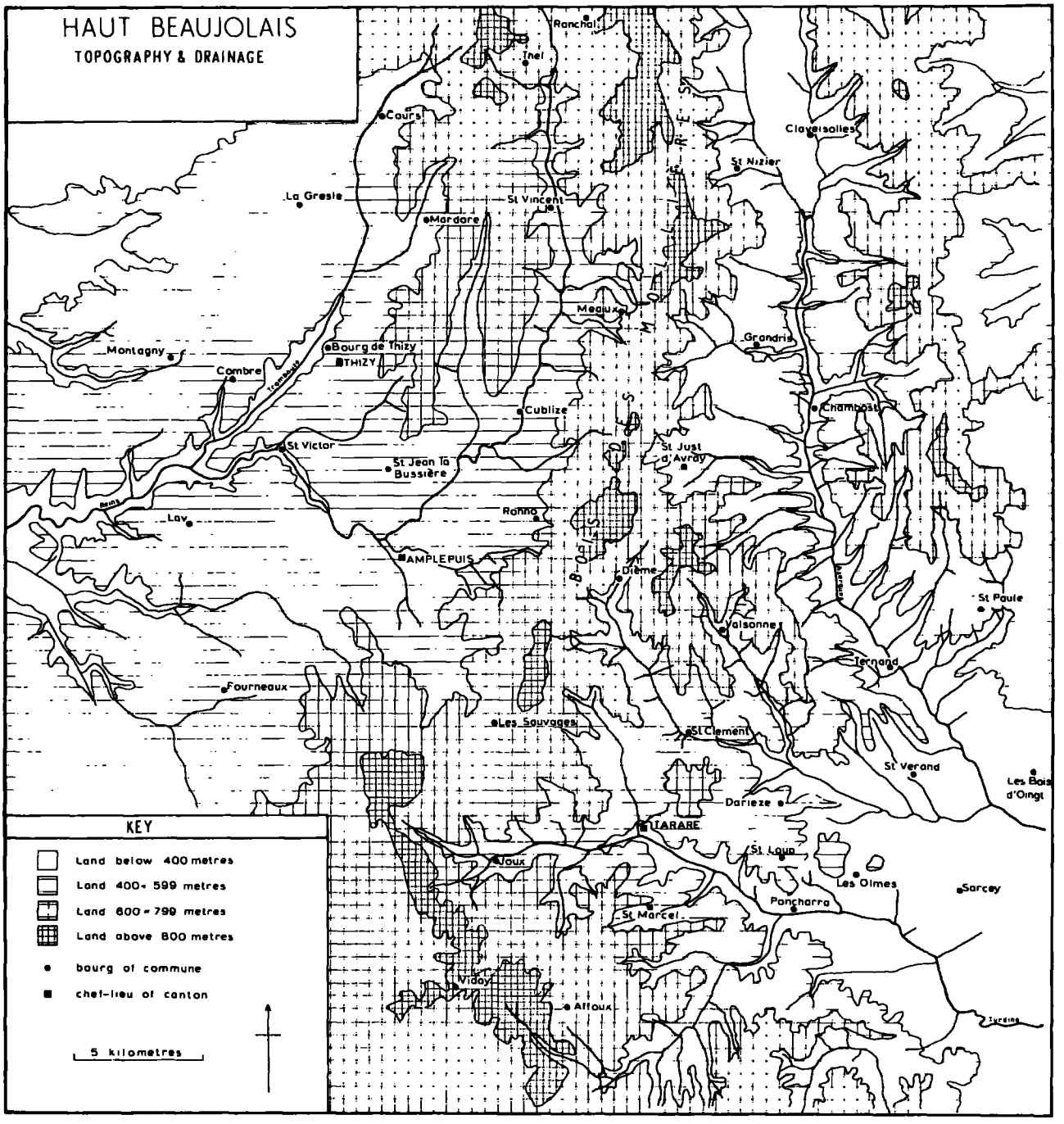
HAUT BEAUJOLAIS
TOPOGRAPHY & DRAINAGE
Ranchal
Thel
Cours
Claveisolles
St Nizier
La Gresle
St Vincent
Mardore
Megiux
Montagny
Bourg de Thizy
THIZY
Combre
Grandris
Cublize
Chambost
St Victor
St Jean la Bussière
St Just d'Avray
Lay
Ronno
AMPLEPUIS
Dième
St Paule
Valsonne
Fourneaux
Ternand
Les Souvages
St Clement
St Verand
Les Bois d'Oingt
Darieze
LARAJE
St Loup
Joux
Les Olmes
Sarcey
Pancharra
St Marcel
Vidoy
Affoux
KEY
Land below 400 metres
Land 400 - 599 metres
Land 600 - 799 metres
Land above 800 metres
bourg of commune
chef-lieu of canton
5 kilometres

Fig. 1.4a

as defined here and by other writers has no real physical unity other than that afforded by its location within a single river basin. The mountains of Beaujolais continue uninterrupted in the north into Mac$\hat{o}$nnais and in the south into Lyonnais and the Massif de Tarare.

(1.2) Geology, Relief and Drainage: the Rossendale Anticline belongs to the Upper Carboniferous - the Middle and Lower Coal Measures and the Millstone Grit series are all represented and are commonly associated with a well defined rhythm of sedimentation of coal, sandstone, mudstone and marine band.[7] (figure 1.5a). The whole Pennine area was buckled and uplifted by recurring earth movements beginning in late Coal Measures times into a series of broad, faulted folds trending in a north-south direction.[8] However, the central plateau of Rossendale owes its elevation only indirectly to folding, being largely the product of the resistance to denudation of the relatively hard grits which cap the anticline. The Darwen Valley is structurally a continuation of the Calder-Darwen Syncline - a down-faulted area with a complex series of faults which have sliced the small coalfield near Over Darwen into numerous small blocks.

The central plateau area is dissected by a number of deeply incised valleys - the Irwell, Limy Water and Whitewell Brook valleys in particular(figure 1.5b) - while the long horizontal lines of the plateau summits and the markedly stepped profiles of the scarp slopes together with the deep valleys are the dominant morphological features of the landscape. The plateau summits are so level and well adjusted to either structure or lithology that they have long been suspected to be erosional plains.[9] The development of the benches

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7 D.A.Wray: "The Pennines and Adjacent Areas." Geol.Survey 1948 pp 1-3.

8 Freeman, Rodgers, Kinvig: "Lancashire, Cheshire & Isle of Man." 1966 p 10.

9 Freeman et.al.1966 op.cit. p 13

of the scarp slopes results from the differential erosion of grits, sandstones and shales lying in an approximately horizontal plane. These terraces have always proved attractive to settlement in the region.

Haut Beaujolais forms part of the extreme north-eastern fringe of the Massif Central. Together with the mountains of Macônnais, Charolais, Lyonnais and Tarare it forms a ridge of high land rising above the synclinal troughs of the Saône Plain and Loire Valley.(figure 1.2). The Massif Central is an Hercynian bloc, initially folded and uplifted in Carboniferous times and subsequently reduced to a peneplain. The concordance of summit levels around 800 metres in Haut Beaujolais represents the remains of an old erosion surface. The region is composed of hard crystalline rocks of igneous origin; ancient Palaeozoic rocks have been submerged and transformed by successive eruptions. The region is dominated by gneiss, granite, micro-schist, micro-granite and granulite: sedimentary rocks are totally absent.[10](figure 1.4b). Following uplift and throughout Mesozoic and Primary times the Massif Central remained a central island in periods of marine transgression.[11] However, there are a number of small coal basins scattered throughout the uplands, though for the most part they ante-date the Hercynian orogeny. The region owes its character today to tectonic movements associated with the Alpine orogeny which raised the eastern part of the bloc. Folding did not take place: the crystalline rocks were too rigid and instead tended to fracture producing a complex series of faults and displacements. The trend of the mountains in Haut Beaujolais is north-east to south-west, representing the direction of the original Hercynian folds and producing a set of well defined ridges which form the

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10 L.Gallois: "Macônnais, Charolais, Beaujolais, Lyonnais - Orogénie et Orthographie." Annales de Géographie 3 1894 p 202.

11 A.Barre: "Le Sol de la France." 1903 p 314.

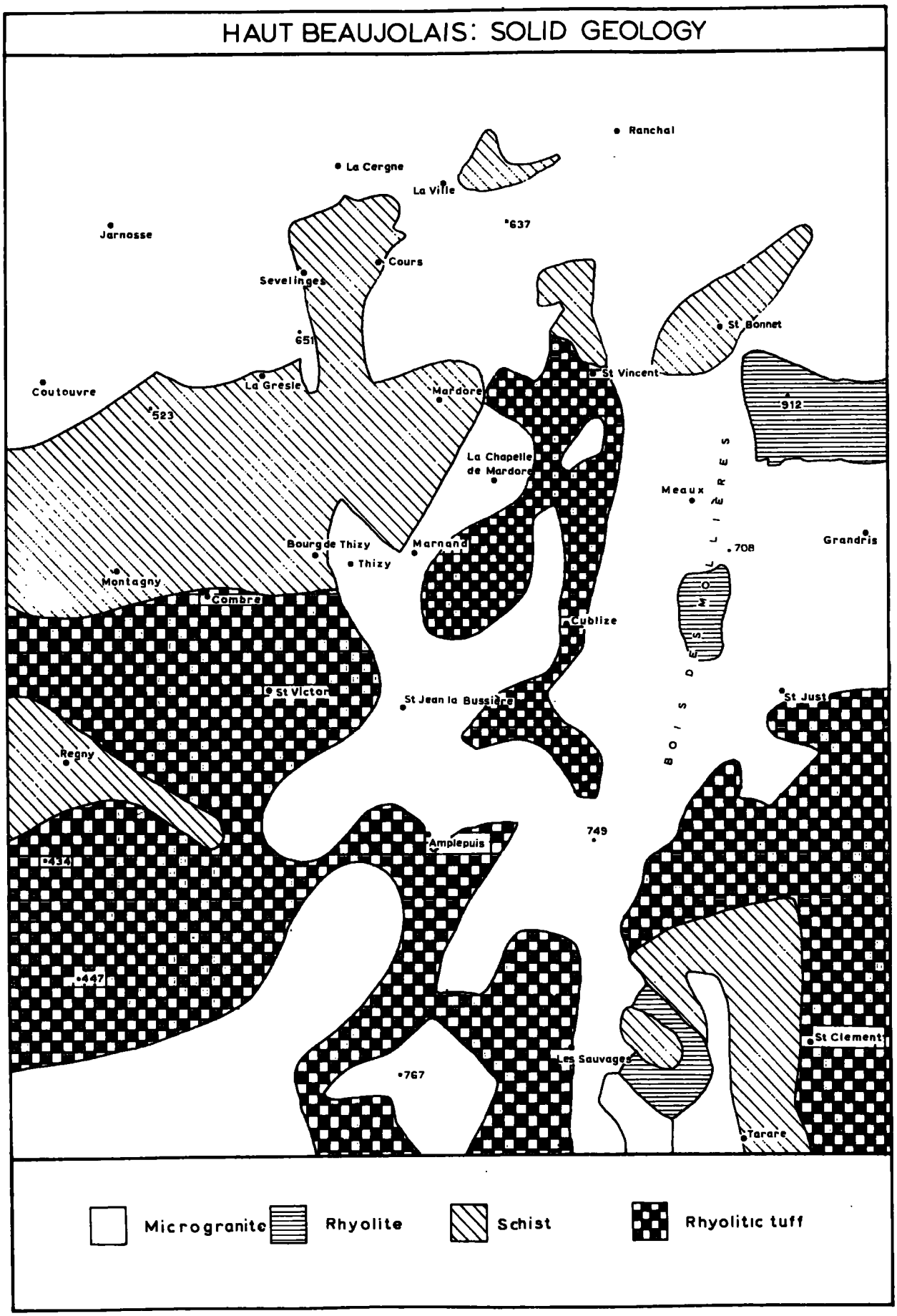
HAUT BEAUJOLAIS: SOLID GEOLOGY
Ranchal
La Cergne
La Ville
637
Jarnosse
Cours
Sevelinges
651
St Bonnet
Coutouvre
La Gresle
Mardore
St Vincent
912
523
La Chapelle de Mardore
Meaux
Grandris
Bourg de Thizy
Marnand
Thizy
708
Montagny
Combre
Cublize
St Victor
St Jean la Bussière
St Just
Regny
749
Amplepuis
434
447
St Clement
Les Sauvages
767
Tarare
Microgranite
Rhyolite
Schist
Rhyolitic tuff

Fig. 1.4b

interfluves between the valleys of the Reins, Trambouze and Azergues.[12]

The upland surfaces of Beaujolais have undergone considerable dissection with summits rarely forming plateau surfaces as in Rossendale. In the Massif de Tarare, isolated cones, formed by the advanced weathering of homogeneous, crystalline rocks are a distinctive feature of the landscape. In Haut Beaujolais continuous north-south ridges interspersed with broad lowland basins belonging to the Reins, Trambouze and Azergues valleys dominate the landscape.[13]

"Vu des hauteurs, même dans sa partie la plus montagneuse le pays conserve toujours ses lignes calmes et harmonieuses. Les sommets isolés y sont très rares."[14]

(1.3) Climate: mean annual precipitation is high throughout Rossendale as compared with the adjacent lowland areas of south and west Lancashire. The amount of rain received is largely dependent on altitude and as lowland areas in Rossendale are not extensive high mean annual precipitation totals are hardly surprising. Data showing precipitation totals at four stations in Lancashire are given in table 1.1 below:[15]

Table 1.1 Mean Monthly Precipitation (mm).

	J	F	M	A	M	J	J	A	S	O	N	D	Total	O.D(m)
Darwen	147	94	83	84	84	86	117	155	147	132	140	150	1420	220
Bolton	119	74	69	69	71	79	107	132	119	104	117	130	1184	103
Stonyh'st	117	84	64	41	69	79	117	137	119	114	114	130	1212	200
Squires Gt	84	56	46	46	63	53	79	91	90	86	86	86	869	0

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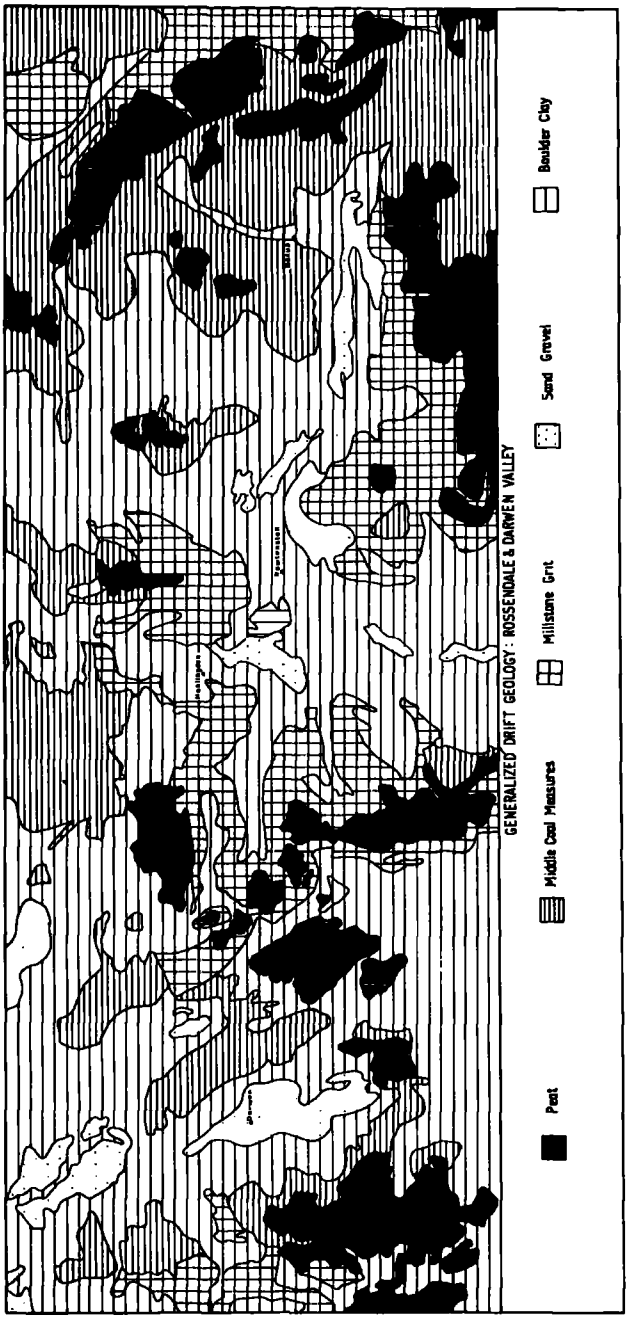
12 Gallois 1894 op.cit. pp 204-206.

13 J.Labasse & M.Laferrere: "La Région Lyonnaise." 1966 p 24.

14 F-A.Varnet: "La Géographie du Département du Rhône." 1897 pp 328-62.

15 British Association: "Manchester and its Region." 1962 p 42.

A


GENERALIZED DRIFT GEOLOGY : ROSSENDALE & DARWEN VALLEY
Peat
Middle Coal Measures
Millstone Grit
Sand Gravel
Boulder Clay

B

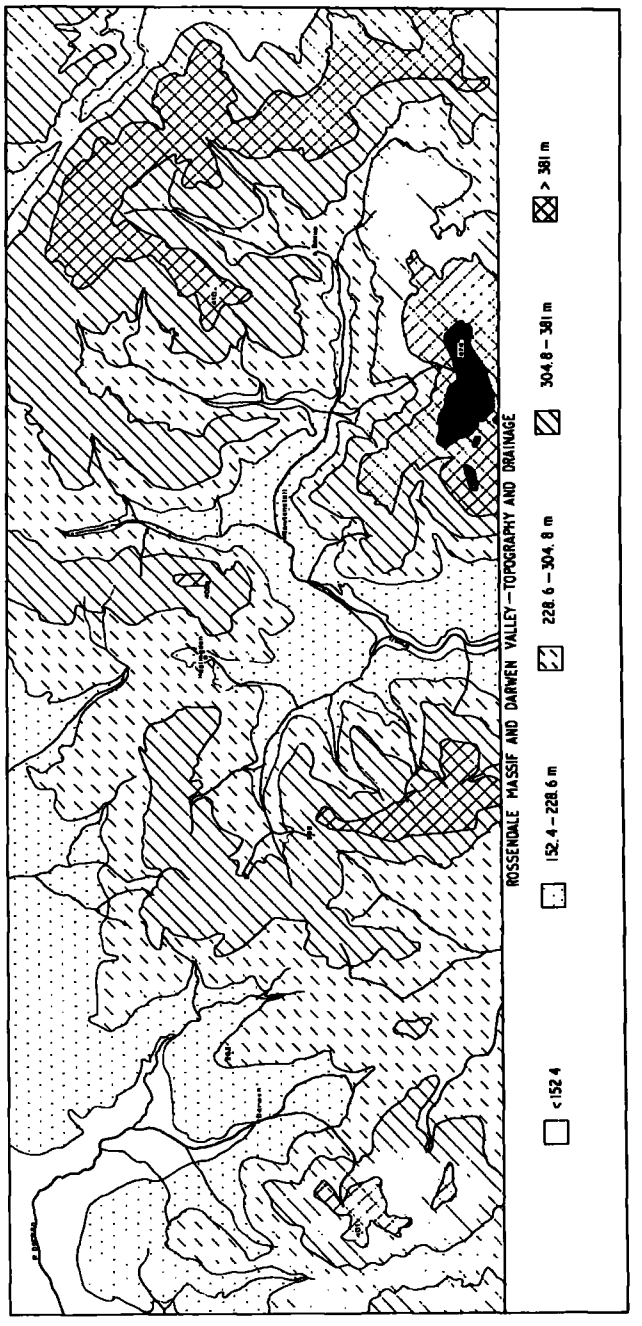

ROSSENDALE MASSIF AND DARWEN VALLEY—TOPOGRAPHY AND DRAINAGE
< 152.4
152.4 – 228.6 m
228.6 – 304.8 m
304.8 – 381 m
> 381 m

Fig. 1.5

On land above 300 metres in Rossendale mean annual precipitation is over 1200 mm. Great House Experimental Station (altitude 274 metres) at Helmshore averaged 1424 mm 1960-63.[16] Jackson Reservoir on Oswaldtwistle Moor averaged 1626 mm 1950-58.[17] Temperatures fall with increasing altitude and even in the most favourable areas mean July temperatures are below 15 degrees centigrade. Cloudiness and a large number of wet days are a distinctive feature of the climate.

By comparison Haut Beaujolais has a more favourable climate for agriculture and human occupance. Length of growing season is longer, temperatures generally higher and precipitation less. The cantons of Thizy and Amplepuis occupy the gentle western slopes of the Beaujolais Massif facing towards Roanne and the Loire Valley. These western slopes are more exposed to Atlantic influences and are consequently wetter than the eastern slopes which fall more abruptly towards the Côte Beaujolais and the Saône Plain. Precipitation increases with altitude and is nearly 50 percent higher in the mountains than in the surrounding lowlands. (figure 1.6). The influence of the Atlantic and Mediterranean ensures that temperatures are never very low.(table 1.2 below). At the Col des Sauvages (725 m)

Table 1.2 Climatic Data: Loire Valley, Beaujolais, Lyon.[18]

Stations	Altitude	Rainfall(mm)	No. of Rainy Days
Roanne 1	277	633	-
Roanne 2	210	703	125
Fourneaux	530	816	-
Sauvages	725	1005	-
Cublize	452	882	173
Tarare	415	869	124
Les Écharneaux	714	1198	140
Lyon (Tête d'Or)	172	758	152

there is no month when the mean temperature falls below zero. The

16 C.J.E.Laithwaite: "Hill Farming in South-east Lancashire." Unpublished B.A. dissertation. Durham University 1965.

17 British Association ibid.

20 Gallois 1895 op.cit. p 295

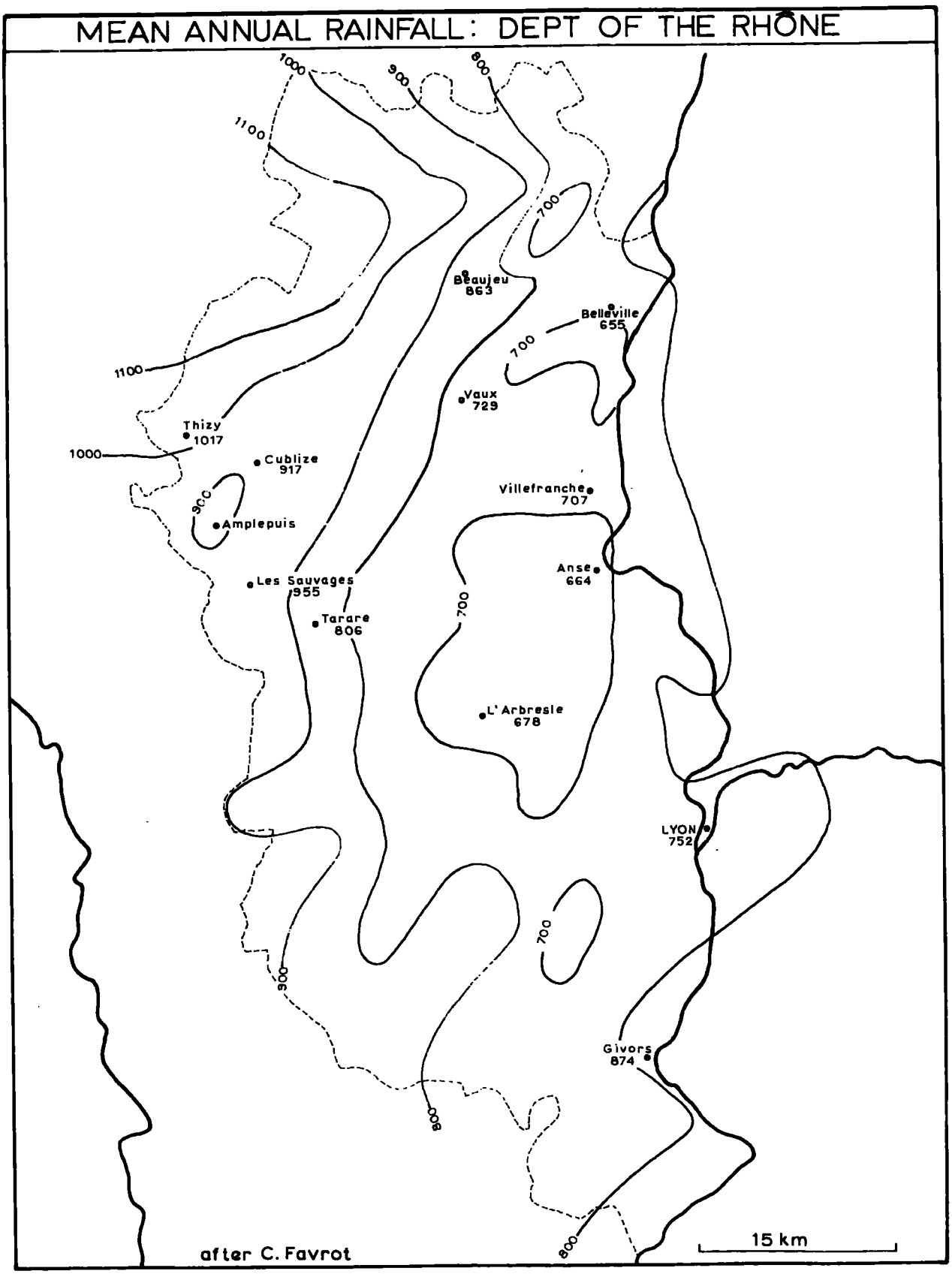

MEAN ANNUAL RAINFALL: DEPT OF THE RHÔNE
1000
900
800
1100
700
Beaujeu
863
Belleville
655
1100
700
Vaux
729
Thizy
1017
1000
Cublize
917
900
Villefranche
707
Amplepuis
Anse
664
Les Sauvages
955
700
Tarare
806
L'Arbresle
678
LYON
752
700
900
Givors
874
800
800
15 km
after C. Favrot

Fig. 1.6

mean minimum January temperature is -2 degrees centigrade and the maximum 3 degrees centigrade. Summers are cool: the mean July temperature does not exceed 17 degrees centigrade and periods of excessive warmth are rare. Snow cover is never sufficiently thick or prolonged to protect autumn-sown cereals.[19]

1.4) Soils: in Rossendale heavy precipitation throughout the year and low rates of evapotranspiration are conducive to leaching and the development of poor, acidic soils. These conditions have favoured the development of blanket peat on the flat plateau surfaces above above 350 metres. Glaciation has left extensive drift and boulder clay deposits in the region. The Ribblesdale Drift is the most widespread - generally a stiff, plastic clay of blue-grey colour and full of limestone and chert boulders.[20] This glacial material forms the parent material for soils which in the sheltered valleys consist mainly of podzols and in the better areas brown earths.[21]

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19 Houssel ibid.

20 Geological Memoires of England: "The Geology of the Rossendale Anticline." H.M.S.O. 1927 passim 131-142.

21 B.Hall & C.Bolland: "Soils of Lancashire." 1970 Soil Survey of Great Britain no. 5 pp 10-62 passim.
The Soil Survey of Lancashire recognises three distinct topographic units which are responsible for five major soil associations. These units are: (1) the high plateau surfaces (2) the steep scarp slopes (3) the gentler sloping foothills. Soils vary from peaty-gleyed podzols to brown earths. The soil associations recognised are as follows: (a) Winter Hill Association: confined to the plateaux above 275 metres. An organic soil with peaty-gleyed podzols in places. Climatic conditions involve severe exposure with strong winds, low temperatures and high rainfall. Rough grazing and since the mid-19th century water catchment are the principal land use functions of the plateaux. (b & c) Belmont and Wilcocks Associations: found on the scarps and steeper slopes. Soils are extremely acid - peaty-gleyed podzols which support heath communities dominated by mat-grass, bilberry and wavy-hair grass. Large areas were enclosed from the waste and temporarily improved for pasture in the late 18th century. Today most of these areas are rush-infested and have reverted to wet heath. (d & e) Brickfield and Rivington Associations: occupy the foothills are formerly covered extensive areas of the old Forest. The Rivington Associations are less widespread occurring on valley sides and gentle slopes. The Brickfield soils are derived from drift overlying areas of Millstone Grit and Coal Measures. Soils are leached though the associations include brown earths as well as podzols. Most of these soils have been cultivated. In the 18th and 19th centuries tillage for oats and barley was common.

In Haut Beaujolais, soils, especially away from the valleys are of mediocre quality being shallow and difficult to work. The shallow nature of the soils is related to the resistence of igneous and metamorphic rocks to weathering. In addition soils are often rocky and excessively drained becoming dry after a few days of drought. The nature of the parent material and constant leaching produces marked acidity which is accentuated in many areas by the presence of pine and fir forest. Soils generally lack humus and phosphorous though are fairly rich in potash. Valley soils derived from glacial material are more favourable to cultivation: they are deeper with clayey structures and are easily worked, providing good arable land.

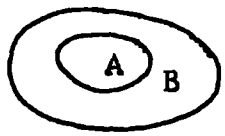
(1.5) Conclusion: the environment in both regions offers limited possibilities for agriculture and rural settlement. Excessive rainfall, low temperatures and difficult relief have led to the formation of podzol and gleyed soils and only in the sheltered valleys has tillage been possible. The most extreme expression of the severity of environmental conditions is the blanket peat that covers large areas of Rossendale moorland. Rossendale is a more marginal environment than Haut Beaujolais. This is largely due to latitude and to Rossendale's greater exposure to Atlantic influence. However, the latitudinal factor is to a certain extent compensated by altitude - summit levels in Haut Beaujolais being nearly twice as high as those in Rossendale. Evenso, length of growing season is longer, temperatures higher and rainfall less in Haut Beaujolais. In spite of this Haut Beaujolais in modern times has not proved an attractive environment for human settlement and indeed, when compared with rich agricultural areas such as the Saône Plain and the Loire Valley it is distinctly marginal. In Rossendale the poverty of

environmental resources has been exacerbated by overgrazing of the moorlands and atmospheric pollution which has increased the acidity of the soils.

The brief look at physical geography in this chapter suggests that the scope for agriculture and for dense rural settlement is strictly limited in both regions. And yet, as we shall see in subsequent chapters the very adversity of the environment appears to have played an important role in economic development which from the early 17th century produced rapid population growth and expansion of settlement with high densities of rural population that were significantly higher than those in the apparently more favourable, surrounding rural areas.

Chapter 2: The Domestic Textile System.

(2.1) It is possible to consider the regional geography of Rossendale and Haut Beaujolais within the broad framework of the dominant economic systems prevailing at any one period. Using this approach two distinct systems or sets must be defined. These sets are illustrated by Venn diagrams below:



Set A represents the set of all elements in the regional systems of Rossendale and Haut Beaujolais (i.e. the elements of traditional regional geography - environment, resources, population, transport networks etc.) The limits of this set are determined by real, geographic boundaries, whether defined administratively or according to physical criteria. Set B is the dominant economic system and would usually be included in set A. In the context of the two study areas set B has greater areal extent than set A, and in areal terms contains the whole of this set. This chapter is primarily concerned with a definition of set B; an identification of its principal components and its locational significance within Rossendale and Haut Beaujolais. Later chapters consider the elements of set A and analyse the inter-actions and functional relationships between the two sets and the way they affect and modify each other over time. However, this chapter begins by assessing the usefulness of systems theory as a model of organization in historical geography.

(2.2) Systems, the Domestic Textile industry and Time: systems analysis has been used for organizing and analysing knowledge in complex pieces of research, behavioural as well as physical, qualitative as well as quantitative.[1] The justification for adopting systems analysis here stems partly from dissatisfaction with the traditional

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[1] T.Wilbanks & R.Symanski: "What is Systems Analysis?" Prof.Geogr. 20 1968 p 82

narrative and genetic approaches to historical geography and partly from a belief that systems analysis could provide a more satisfactory organization model when dealing with dynamic geographical phenomena which show considerable variation over time.

Harvey[2] has defined a system using set theory notation as follows:

$S = (A, R)$ where A comprises the elements of the system S and R is the relationships between these elements.

Any system possesses the following attributes: structure; behaviour; environment; and state. The structure of a system refers to its elements and the linkages or relationships between these elements. In defining an element we are immediately confronted with the problem of scale. Each element can be regarded as a system at a smaller scale or lower resolution level. Thus definition of any system depends on the scale at which we view that system. The relationships between elements in the system provide the second component of structure. There are a number of recognised relationships of which the most important are simple cause-effect relations, parallel relations and feedback relations.[3] Behaviour is concerned with flows, stimuli, responses, inputs and outputs. Stimulus can often be equated with input and is often related to change in the environment, the effects of which are transmitted through the system until all connected elements are affected. The response of the system can be regarded as the output and usually produces a feedback effect on the environment. In systems language, 'environment' may be thought of as everything there is. In more precise terms it may be defined as a high-order system changes in whose elements will induce change in the elements of the system under examination. In the context of this study the dominant economic system (i.e. the textile industry) is

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[2] Harvey op.cit. p 451.

[3] Harvey op.cit. p 455.

recognised as the environment. The regional systems of Rossendale and Haut Beaujolais are lower-order systems contained within the environment. Finally the state of any system refers to the condition of the elements at a given point in time. When inputs or stimuli cease to vary with time, conditions have become stabilized and equilibrium or steady state conditions prevail.

Systems are abstractions of reality and in no measure can they be said to represent the real world in totality. A fundamental assumption in systems modelling is that systems are 'closed'. This is a false assumption as the overwhelming majority of real systems are 'open'. However, to attempt to model open systems would prove extremely complex, and even if successful would do little to further our understanding of the complexity of the real world. In another sense which is particularly relevant to historical studies systems analysis involves major simplification: real systems are not static entities but show continual change and variation over time. Strictly speaking therefore total definition of any system is impossible. The success of model systems that incorporate the time element is thus intimately related to the degree and speed of change. Yet though the time factor is present in all happenings it need not necessarily be explicitly formulated and thus systems can be recognised which maintain a more-or-less steady state, then time is not an important variable.[4] This view is adopted here as a principal base from which to regard the economic systems in Rossendale prior to, and during industrialization.

(2.3) The Domestic Textile Industry: the industry may be said to contain the following elements: capital, labour, entrepreneurs, raw materials, finished goods, production units, channels of movement and market centres. These elements operate and function within the

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4 R.Ajo: "An Approach to Demographical Systems Analysis." Econ. Geogr. 38 1962 p 361.

framework of the putting-out system and in addition possess the attributes of distribution in space and change through time. The spatial dimension of systems though often neglected is particularly appropriate to geography: it recognises that any system that maintains a steady-state over a substantial period of time gives rise to distinctive spatial patterns of a socio-economic nature.

Before discussing the domestic textile industry and the putting-out system it is first necessary to consider the problem of chronology and the adequacy of documentary sources relating to this topic.

(2.4) The Problem of Chronology: the domestic outwork system is usually regarded as the stage of economic development which preceded the factory system associated with the industrial revolution. Although over-simplified, this concept is widely accepted and it is not proposed to challenge it here. However, the emergence and widespread adoption of the factory system did not signal any immediate discontinuity or sudden decay of the old system. Rather the industrial revolution marked a gradual change, and in temporal terms at least, 'revolution', as others have pointed out is something of a misnomer. In Rossendale, one of the earliest regions of industrialization in Lancashire, the domestic outwork system and the factory system flourished side by side until the second half of the 19th century. The Census Enumerators' Schedules of 1851 reveal large numbers of hand-loom weavers in Rossendale at this date and there were relatively greater concentrations in remoter areas such as Pendle and Bowland. In Haut Beaujolais change was even more gradual, and though a rapidly declining occupation after 1880 hand-loom weaving survived in this region until well into the 20th century. It would seem unrealistic therefore to regard industrial development as proceding in a number of sharply definable stages. Again this can

be usefully illustrated with set theory. If we represent the domestic outwork system by set A and the factory system by set B, then the intersection of A and B is the situation where both systems operate simultaneously (i.e. the period 1790-1850 in Rossendale, and 1850-1900 in Haut Beaujolais.)

In defining the domestic outwork system we assume that the time factor has a negligible effect on the system in that stability was the norm over a prolonged period. However, systems are dynamic entities and such an assumption is an oversimplification. But if we accept the assumption of equilibrium, then in an unchanging system there is no logical reason why data should not be taken from either end of the time-scale as representative of the state of that system at any one time. The real focus of this study, however, is the regional system and its response over time to the changing inputs and stimuli of the high-order, economic system. Naturally the regional system of 1850 will be different from the regional system of 1750, though remaining a part of the same economic system. Nonetheless the regional system which has remained part of the same economic system over this period will show far less change and greater stability than areas of the regional system which have been absorbed into the new high-order system (i.e. the factory system). There is a continuity in the first situation which is absent in the second and for this reason there is some justification, when considering the domestic outwork system for drawing on 19th century data to illustrate possible structures in the 18th century regional system.

(2.5) Documentary Evidence: documentary material of a statistical nature that relate specifically to the English domestic textile industry do not, and never did exist. There was no census or government enquiry into rural industry in England and information about

these industries must be obtained through indirect sources such as parish registers, wills and inventories, and most often from the verbal descriptions of contemporaries. In France the greater interest and control of the government in the economic life of the nation has ensured that a richer source of statistical material is available to the researcher.

(i) Parish Registers: it was never obligatory for the Anglican clergy to record occupations alongside acts of baptism, marriage and burial in parish registers. However, in certain parishes for certain years occupations have been recorded. As a reliable indicator of employment structure in the pre-censal period these data suffer on two counts:

(a) the extremely patchy occurrence of this material, making contemporary comparison difficult.

(b) the lack of any standard classification of occupations. The occupation alotted to an individual in the registers was in many cases the result of an arbitrary decision on the part of the parish priest or else subject to the whim of the individual concerned or his/her relatives.

Quite apart from these general problems the economic structure of 18th century Rossendale and East Lancashire causes further ambiguity. A large proportion of the populations of these areas could not be simply described as 'farmers','weavers' or 'husbandmen' because of the widespread nature of dual occupations with work shared on a seasonal basis between industry and agriculture. It is significant when discussing the value of the occupational data contained in parish registers that no instance of the recording of dual occupations was found in the analysis of nearly twenty Lancashire registers.

The recording of occupations in 18th century French parish

registers was far more frequent. The Déclaration of 1736 made compulsory the recording of occupation for an act of burial but long before 1736 this information had been recorded for all vital acts. To this extent French registers contain a greater bulk of occupational data than their English counterparts though at the same time suffering similar problems of classification which reduces their value. The État Civil which after 1792 placed registration in the hands of the municipal authorities can be criticised on the same grounds. In spite of their shortcomings parish register material can, if used with caution, tell us something in broad terms about the distribution of rural industry and its relative importance vis a vis agriculture, as well as the type of cloths manufactured in a particular area.

(ii) Wills and Inventories: these documents which are only available for Rossendale give an insight into the organization of rural industry at a very personal scale. Unfortunately this insight is no more than a mere glimpse, for such documents do not exist in sufficient bulk at a local scale to make possible meaningful generalization.

There are no other important 18th century English sources that relate to the domestic textile industry and indeed 19th century sources are almost equally sparse. The parliamentary enquiries into hand-loom weaving were really concerned with social distress among this group when the industry was in a state of rapid decline. Statistical data relating to even the coarsest areal units are not contained in these reports. It is necessary to wait until the 1841 and 1851 Enumerators' Schedules in order to gain a fuller picture of the domestic outwork system. Even at this late date there remain a number of problems, not least being the difficulties of occupational classification. However, full discussion of the value of these censuses

is delayed until chapter 3.

French documentary sources other than parish registers which relate to the domestic outwork system are incomparably better than their English counterparts. The greater governmental interest in the economic affairs of 18th and 19th century France led to a virtual plethora of official enquiries into all aspects of economic life before 1850. However, only a small proportion of such enquiries were completed for the whole of France and indeed many of those actually completed were of dubious value and rarely found their way into the departmental archives. Where material has survived it has generally been classified under series M of the departmental archives. This series is notoriously difficult to work with: much of the material has never been properly classified, making research often laborious and wasteful. Because the industrial revolution in France did not get underway until the mid-19th century, most 19th century enquiries into the textile industry were reporting on the domestic rather than the factory system. In Britain the first serious attempt of a statistical nature to enquire into the textile industry was made by the Factory Inspectorate in 1841. Unfortunately, this enquiry was concerned only with the factory system and ignored other forms of production.

(2.6) Distribution of the Domestic Textile Industry: parish registers are the most important source of evidence relating to the distribution of the textile industry in Lancashire in the pre-industrial period. Seventeen registers were examined including those which survive for Rossendale.[5] They were chosen for their accessibility

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[5] The registers and the number of entries relating to population were: Bentham 39; Bolton by Bowland 167; Croston 93; Downham 177; Garstang 47; Goosnargh 58; Great Harwood 182; Halsall 85; Haslingden 491; Lower Darwen 104; Newchurch-in-Pendle 246; Newchurch-in-Rossendale 72; Over Darwen 124; Upholland 179; Walton-le-Dale 88; Woodplumpton 102; Yate and Pickup Bank with Eccleshill 70.

and quality of registration of occupations around 1720. In this sense it is unlikely that they are spatially biased. Recorded occupations were divided into three broad categories: agriculture; industry; and others. The general vagueness and uncertainty of recorded occupations precludes a more detailed breakdown. These three categories have been expressed as a percentage of total recorded occupations and plotted on triangular graph paper (figure 2.1b). The category refering to industry includes all occupations connected with textiles (e.g. weavers, spinners, carders, chapmen, clothiers.) In Rossendale 'labourers' have been included in this category also as it is clear that a large proportion of those described as 'labourers' in the registers of this region were in fact weavers. At Haslingden for example, 42 percent of the employed population were recorded as labourers, yet, at Newchurch-in-Rossendale eight kilometres to the east (a parish which was historically, economically and geographically similar) the percentage was zero. Elsewhere labourers are far less ubiquitous. Where they occur they have been included with agriculture rather than industry.

Evidence relating to the distribution of the textile industry in Beaujolais is only partly derived from parish register sources and on the whole is more reliable. In addition to parish register material similar to that for Lancashire, the 'Enquête Agricole' of 1862[6] included a section devoted entirely to the distribution of rural industry in each commune. This material has survived for the Arrondissement of Villefranche which roughly corresponds to the area of the old province of Beaujolais. The enquiry being principally concerned with agriculture did not consider the newly established factory system and hence the proportion of

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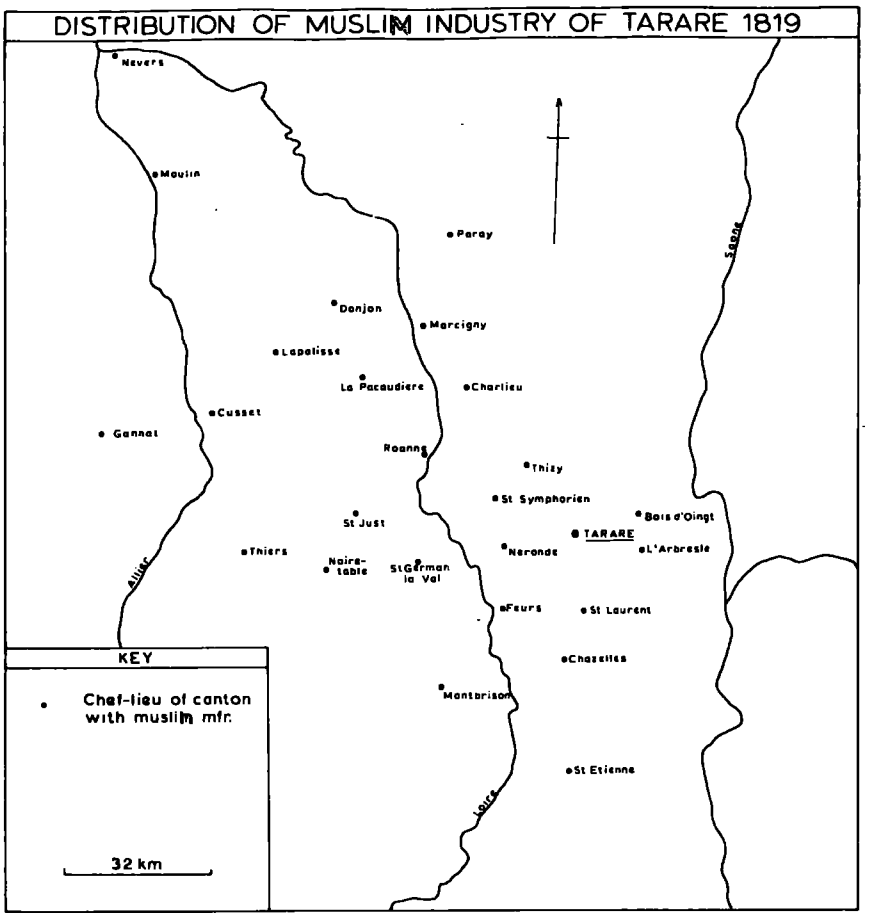
6 L'Enquête Agricole 1862: series M of the Archives Départementale du Rhône.



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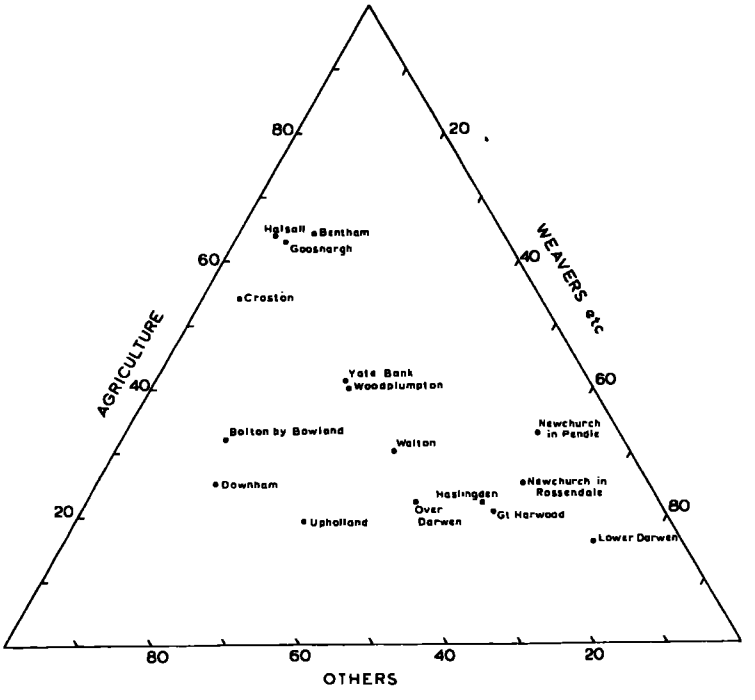

B

OCCUPATIONAL STRUCTURE c1720

Fig. 2.1

those employed in textiles in the communes of Thizy and Tarare tends to be underestimated. According to Gille[7] the enquiry of 1862 was fairly exact thanks mainly to the experience gained in previous years by the cantonal commissions in dealing with the 'Statistique Annuelle'.

The distributional pattern of the domestic textile industry in Lancashire and Villefranche is broadly similar. The most important industrial areas were those least attractive to agriculture such as Rossendale and Haut Beaujolais. However, the localization of industry in Lancashire ought not to be exaggerated: each of the seventeen parish registers considered showed evidence of textile workers. When therefore we talk of industrial regions in Lancashire in the pre-industrial period, this is not to imply that the domestic textile industry was confined to a few, small sub-regions, rather that the degree of dependence on industry was proportionately greater in such areas.

On the basis of occupational data contained in parish registers a crude tripartite division of Lancashire can be made:

(i) Parishes with more than 60 and less than 20 percent of their employed populations engaged in agriculture and industry respectively.

(ii) Parishes with between 20 and 45 percent of their populations employed in agriculture, and between 15 and 40 percent engaged in industry.

(iii) Parishes with less than 35 and more than 45 percent of their employed populations engaged in agriculture and industry respectively.

This classification is based on figure 2.1b. Groups 1 and 3 are well defined, group 2 less so. With regard to the spatial aspects of this classification a number of facts are clear. First, all parishes that fall into group 3 (i.e. rural-industrial parishes)

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7 A.Gille: "Sources Statistiques de l'Histoire de France." 1964 p 243

are located in the upland Pennine fringes of Lancastria. In group 2 four of the six parishes occupy the transitional zone between the upland massif and the plain - Walton-le-Dale at the western extremity of the Pendle Anticline; Downham at the foot of Pendle Hill itself; Upholland in the broken country around the outlying mass of Parbold; and Bolton-by-Bowland in the Ribble Valley above Clitheroe. Anomalous in this group are Yate and Pickup Bank with Eccleshill, situated in the industrial belt of the upland zone, and Woodplumpton located in the eastern Fylde. The first might be explained by the large percentage of the population belonging to the employment category 'others': it is possible that a significant part of this group were employed in some branch of the domestic textile industry. Woodplumpton is anomalous because of the surprisingly large numbers employed in hand-loom weaving. It would appear that even in predominantly agricultural areas there were parishes where industry was of particular importance. Finally group 1 comprises four parishes: Croston and Halsall, located on the Triassic plain where agriculture was pre-eminent; Goosnargh, a very large parish occupying a transitional location between the Fylde and the Forest of Bowland; and Bentham situated in the upland areas north of Bowland which possibly finds itself in this group because it lay outside the industrial hinterland of south and east Lancashire.

In spite of the deficiencies of parish register material the broad distributional pattern of the domestic textile industry in 18th century Lancashire is unmistakeable. The industry was concentrated in the Pennine fringe areas while at the same time there was a wide scatter of industry in the lowlands. However, nowhere did it assume the same predominance in the employment structure as in the upland zone.

In 1862 in Villefranche the domestic textile industry was concentrated in the extreme west of the arrondissement (figure 2.2).

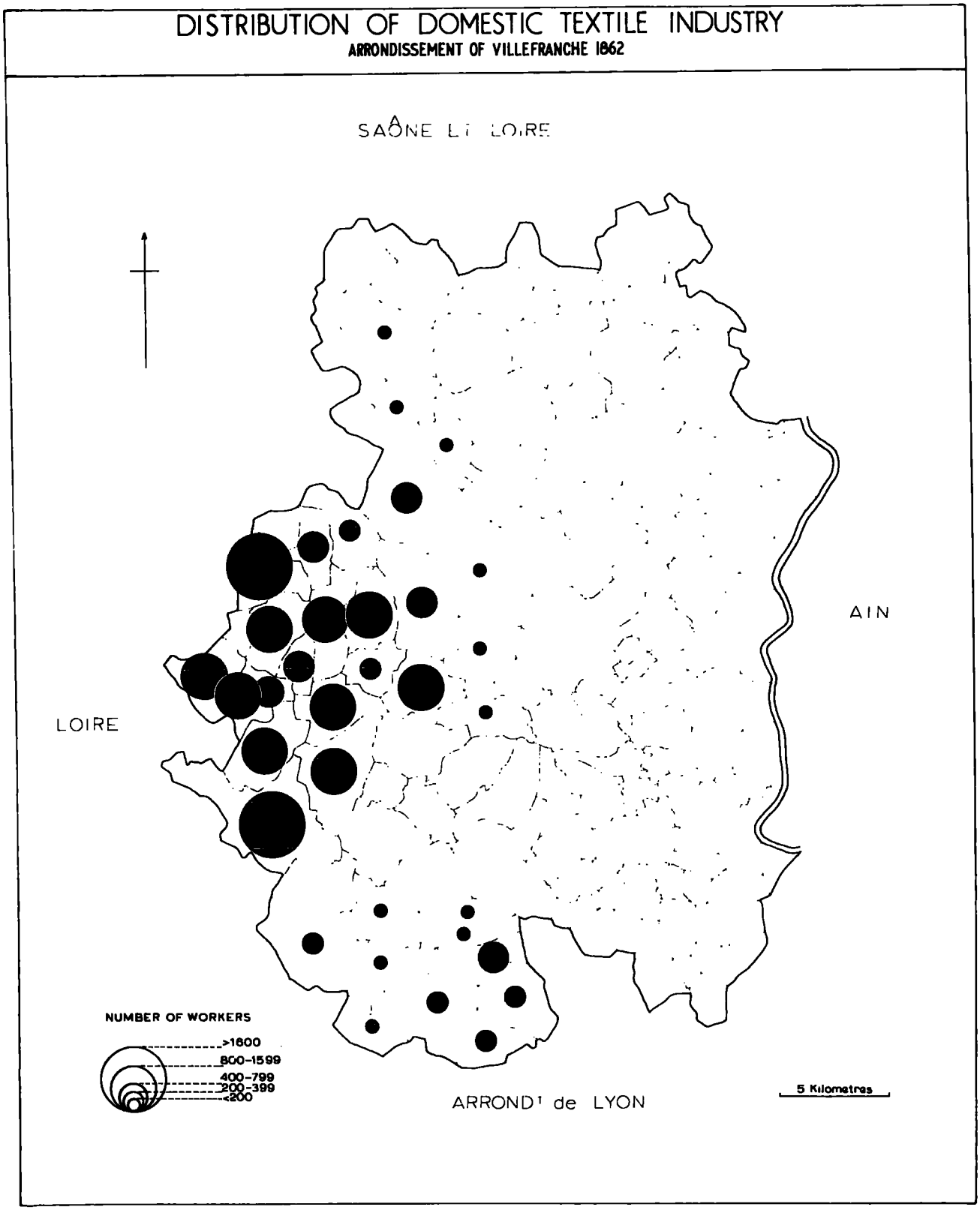
DISTRIBUTION OF DOMESTIC TEXTILE INDUSTRY
ARRONDISSEMENT OF VILLEFRANCHE 1862
SAÔNE ET LOIRE
AIN
LOIRE
ARROND¹ de LYON
NUMBER OF WORKERS
>1600
800-1599
400-799
200-399
<200
5 Kilometres

Fig. 2.2

This distribution is illustrated in table 2.1 below:

Table 2.1 Distribution of Domestic Textile Industry 1862.

Canton	Employment
Thizy	10,520
Lamure	4,399
Tarare	2,998
Monsols	215
Total	18,132

The industry in the arrondissement of Villefranche was localized in these four cantons situated in the mountains of Haut Beaujolais to a greater extent probably than the localization of industry in the Pennine fringes of Lancastria. Industry was entirely absent in the viticultural and agricultural areas of the Côte Beaujolais and the Saône Plain.[8] Outworkers in the neighbouring arrondissement of Lyon (not including those in the city of Lyon) were less numerous: there were 530 persons employed in the silk industry in the canton of L'Arbresle and 800 in the canton of St Laurent de Chamonsset. There were in addition 85 outworkers at Fleuriseux in the canton of Neuville and a thin scatter of textile workers in other cantons, most of whom at the time of the enquiry were unemployed. The distribution of industry had probably changed little since the 18th century. Data concerning occupations taken from parish registers selected at random illustrates the importance of the domestic textile industry in 18th century Haut Beaujolais:

Table 2.2 Occupations: Selected Parishes.

Parish	Weavers etc.	Agricult.	Others
Marnand			
1737-41	61	8	17
Affoux			
1761-69	9	24	26
St Jean la Bussiere			
1737-40	60	25	34
Amplepuis			
1805	77	28	25

The region formed by the textile industry extended west of Haut Beaujolais into the departement of Loire. Communes such as Regny,

[8] The parish registers of Dracé, St Lager and St Georges des Reneins contain no references to industry 1737-92.

Charlieu, Chauffailles, St Symphorien and Montagny located on the gentle western slopes of the Beaujolais Massif, lay within the hinterland of Roanne.

The distribution of the domestic textile industry in Lancashire and Villefranche emphasises the importance of locations in upland areas largely unattractive to agriculture. The concentration of industry in the plateau areas of Rossendale and East Lancashire is paralleled by the relative importance of Haut Beaujolais as an industrial region within the arrondissement of Villefranche. Howver, the widely scattered nature of the Lancashire industry outside the main industrial area appears to contrast with that in Beaujolais where little to no industry was to be found outside the mountainous districts of the province.

(2.7) The Putting-Out System: the putting-out system operated both in Rossendale and in Haut Beaujolais during the 18th century, remaining significant in Haut Beaujolais for most of the 19th century, and in Rossendale until around 1850. The system was one where merchants and entrepreneurs purchased supplies of raw materials such as wool, cotton, silk etc. and yarn which were 'put-out' to spinners and weavers for manufacture in their own homes. The finished products in the form of yarn or pieces of cloth would be collected and sold by entrepreneurs in local cloth and textile markets. This form of industrial production prevailed throughout the industrial regions of Western Europe prior to the large scale adoption of factory production and mechanization in the 19th century. There were two key sets of people involved in this system: the entrepreneurs and the outworkers:

(i) Entrepreneurs: in Lancashire there were two principal classes of entrepreneurs - clothiers and chapmen. In Haut Beaujolais the 'negociants' appeared to perform similar functions. The clothier

was responsible for the production of cloth, the purchasing of raw materials and the putting-out of these materials to spinners and weavers. At the same time he would be engaged in manufacture himself, selling three or four pieces of cloth a week at local markets or to merchants who would send it to other centres or abroad.[9] It was customary for clothiers and merchants to obtain cloth from weavers in the grey and then arrange on their own account for its dyeing and finishing.[10] The distinction between clothiers and chapmen in the literature is not at all clear and it is evident that in certain respects they shared similar functions. According to Tupling[11] the role of the chapman was to bring weavers and clothiers into touch with outside supplies of raw materials and yarn, and to facilitate the marketing of manufactured goods. They bought pieces from smaller producers and either sold them to greater merchants or conveyed them to neighbouring markets.

It seems probable that the capital and credit necessary to the functioning of this system was derived, at least indirectly, from these entrepreneurs. Evenso, evidence relating to the origin of capital is sparse in the extreme and on this subject most of the standard works remain silent. In Lancashire it is likely that the ultimate source of capital was derived from the Manchester merchants. In Haut Beaujolais the Lyon merchants, and later the merchants of Tarare and Thizy, played a similar role. Clothiers and chapmen were not usually based in the regional capital but were scattered in rural areas throughout the industrial region where they were in close proximity to supplies of labour. Chapman[12] stresses the role of the Manchester merchant in Lancashire as the principal functionary in

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9 Tupling op.cit. p 171.

10 S.J.Chapman: "The Lancashire Cotton Industry." 1904 p 4.

11 Tupling op.cit. p 172.

12 Chapman ibid.

the system. Occasional reference to clothiers and chapmen is found in the wills and inventories of 18th century Rossendale.[13] They show that the entrepreneurial class were resident in the region and that in addition to their involvement in trade they were often interested in agriculture. In 1743 for example, John Rothwell, a chapman of Musbury had two cows, a heifer, a calf and two horses as well as looms, gears and woollen yarn. William Fish, a chapman of Eccleshill who died in 1714, left a cow, a horse, broadcloths, napkins, cotton wools, linen yarns and cotton checks valued at £250, while George Haworth, a clothier of Bacup in 1704 had hay and corn valued at £16 and ploughs, harrows, bees, hens, geese and pigs.

With the development of mechanical spinning and the creation of a factory-based spinning industry in Lancashire in the late 18th century, the responsibility for the putting-out of yarn to weavers fell increasingly on the spinning manufacturers. In 1817, David Whitehead, then part owner of a small spinning mill at Balladen Brook in the township of Cowpe, Lench and Newhallhey, recalls how "having got a large stock of weft on hand which did not sell well" he bought some warps and began to manufacture:

"I got a few weavers in the neighbourhood of Balladen Brook... .....and got my mother to weave for us. I took in pieces at my mother's house and made them up there ready for market."[14]

The same out-work system operated in Haut Beaujolais: in each hamlet there were hand-loom weavers working for local cloth merchants. If the system was ultimately dependent on capital provided by Lyonnais or Roannais merchants the key entrepreneurial figures were the local

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13 J.P.Earwaker: "An Index to the Wills and Inventories now preserved in the Court of the Probate at Chester." Vols. XX, XXII, XXIII pub. 1889, 90, 92.

14 "David Whitehead of Rawtenstall." A transcription of the diary of the first David Whitehead. Published in typescript by Rawtenstall Public Library 1956. p 37.

merchants widely dispersed throughout the region:

".....il faut observer que les negociants, qui font le commerce de nos toiles, sont dispersés en plusieurs lieux assez écartés: Lyon, St Symphorien, Regny, Roanne."[15]

Raw materials were distributed to the spinners in the mountains and the yarns taken to the markets at Thizy, Amplepuis, Belleroche, Tarare, Villefranche and Beaujeu where it was sold directly to propertied peasants and 'fabricants' who distributed it to the weavers. The cloth was finally brought to market and sold to the Lyon merchants. The textile industry of Beaujolais was very much a rural industry under the tutelage of Lyon.[16]

(ii) Outworkers: though there were a great many specialist occupations within the domestic textile industry the labour force was dominated by spinners and weavers. The two main features of this labour force were: (1) it was geographically divorced from supplies of capital (2) it was not exclusively employed in industrial production being dependent in varying degrees on agriculture.

Labour was distributed in the functional region surrounding a commercial node formed by the domestic textile industry. This central node was the regional capital (i.e. Manchester or Lyon) though within this region there were sub-regions with commercial centres of secondary importance such as Bolton and Rochdale in Lancashire and Thizy and Amplepuis in Haut Beaujolais. The role of the entrepreneur was to bring together at a single location supplies of labour and capital and thus permit production. The importance of agriculture as a supplement to industry among 18th century hand-loom weavers in Rossendale can be seen in table 2.3 overleaf. The data are

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15 M.Brisson: "Mémoires Historiques et Économiques sur le Beaujolais." 1770. p 246.

16 Cholley op.cit. p 39.

taken from the inventories of nine Rossendale weavers in the period 1700 to 1740.[17]

Table 2.3

	Stock £s	Corn/Fodder £s	Cloth/Looms £s
Robert Ashworth	20.00	20.87	6.75
John Radcliffe	12.75	-	1.50
John Ashworth	56.68	27.00	22.05
John Aspden	13.00	-	0.33
Henry Taylor	29.00	6.40	11.80
John Holden	20.05	15.98	0.85
James Wilson	9.00	2.60	0.85
George Dearden	5.65	3.78	4.25
George Haworth	35.35	18.20	1.00

A large number of weavers obviously had a considerable interest in agriculture and ought more properly to be classed as farmer-weavers. However, the evidence of inventories is not necessarily representative of the structure of employment among this group as a whole: only the more wealthy people had their wills recorded in the Probate Court, and presumably the relationship between the weaver and wealth was in large measure a function of the size of his interest in agriculture. In Lancashire it seems likely that throughout the 18th century there was a substantial rural proletariat whose only source of wealth was derived from the loom and the spinning wheel. The Report of the Committee of Emigration 1826-27 draws attention to this dichotomy and suggests that weavers with little or no interest in agriculture were concentrated in the towns:

"In Lancashire there appear among the hand-loom weavers two classes.....the one who take in work in there own homes and cellars...in the large manufacturing towns; and the other scattered in small hamlets or single houses in various directions throughout the manufacturing district.....it appears that persons of this description for many years have past have been occupiers of small farms ...and combining the business of a hand-loom weaver with that of a working farmer have assisted to raise the rent of their land from the profit of their loom."[18]

For references see page 32.

The poverty of the environment, the non-availability of land and the problems of basing a livelihood solely on agriculture in a marginal upland region were all partly responsible for the appearance of dual occupations in Rossendale and Haut Beaujolais. The dependence on industry was more pronounced in Rossendale where adverse physical factors minimized the importance of arable farming. In Haut Beaujolais, Brisson[19] tells us that for most of the 18th century industry was merely regarded as a supplement to agriculture whereas in Rossendale at this time industry was undoubtedly the dominant economic activity. Thus in Haut Beaujolais industry was a seasonal occupation fitting at convenient moments into gaps in the farming calendar. Spinning and weaving dominated the winter months but in spring "each individual would resume the work ordained by nature."[20] During the harvest period there was temporary migration to the rich arable lands of the Saône Plain and the prosperous wine growing areas of the Côte Beaujolais.[21] This seasonal migration is first mentioned in 1687 by the Intendant d'Herbigny. There is no evidence of comparable seasonal movements in Lancashire and indeed the extent of the weavers' involvement in agriculture is rarely mentioned by contemporary writers. East Lancashire was, however, a pastoral region with permanent and unimproved grassland the major land use. Consequently, demand for labour, even in the summer months

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17 These documents are in the Lancashire Record Office (L.R.O.) Preston.

18 Committee of Emigration 1826-27 Vol. V p 5. Quoted by Chapman op.cit. p 11.

19 Brisson op.cit. p 272.

20 Brisson ibid.

21 Cholley op.cit. p 38.

was never high and must have been considerably below that in Haut Beaujolais. Though large numbers of weavers were small-holders, grazing a cow or two on the common moorlands, agriculture was unquestionably a supplement rather than a viable alternative occupation for the majority of the population of 18th century Rossendale

Table 2.4a[22] Average Daily Wages of Textile Workers: Beaujolais 1862.(f)

	Men	Women	Children
Amplepuis	1.5	1.0	0.5
Bourg de Thizy	1.5	0.8	0.3
C.de Mardore	1.3	0.8	0.3
Cours	1.5	1.0	0.5
Cublize	1.5	1.0	0.5
Marnand	1.3	0.8	0.3
Mardore	1.3	0.8	0.3
St Jean la Bussière	1.3	0.8	0.3
Thizy	1.5	1.0	0.5

Table 2.4b[22] Number of Days worked in Industry per Year.

	Men	Women	Children
Amplepuis	290	240	290
Bourg de Thizy	300	350	260
C.de Mardore	220	210	200
Cours	300	230	270
Cublize	200	250	250
Marnand	200	220	200
Mardore	150	150	120
St Jean la Bussière	240	210	230
Thizy	280	210	220

Table 2.4b shows the domestic textile industry in Haut Beaujolais in 1862 to have been a predominantly full-time occupation. The increase in the dependence on industry since the 18th century was probably commensurate with population growth in the region. Since Brisson's time the population had almost doubled and by 1862 industry appears to have provided the staple means of livlihood for most of the population. The degree of dependence on industry seems to vary according to levels of urbanization in individual communes, the most industrialized being Amplepuis, Thizy and Cours at this time. In the more rural communes there was less dependence on industry which occupied proportionately larger numbers of women, men finding alternative employment in agriculture. Wages were at the same time

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22 Enquête Agricole 1862.

lower in rural communes, following the pattern in Lancashire where wages in the towns were higher than those in the country.

Table 2.5a Agricultural Wages per Day 1862. (francs)

	Before Harvest	During Harvest
Amplepuis	2.00	2.25
B.de Thizy	2.00	2.50
C.de Mardore	2.00	2.50
Cours	2.00	2.50
Cublize	2.00	2.50
Mardore	2.00	2.25
Marnand	1.75	2.50
St Jean la Bussière	1.75	2.25
Thizy	2.00	2.50

The figures in Table 2.5a refer only to wages of men engaged in agriculture, wages for women and children being on average 30 and 50 percent lower. In general wages in agriculture were around 30 percent higher than those in industry while at harvest time wages rose to nearly two-thirds more than those in industry. The incentive to quit industry temporarily at harvest time was quite considerable and in simple economic terms industry would appear to have been a less attractive proposition than agriculture. Why, therefore the great dependence on this form of economic activity rather than agriculture? This is a question we shall seek to answer in this and the following two chapters.

Finally in this section we must consider the advantages of the domestic textile industry as a complementary economic activity to agriculture. There are three main advantages:

(1) the domestic manufacture of textiles was a fairly simple procedure. The fabrics woven were usually coarse and required no special skills. This was especially true of regions such as Haut Beaujolais where industry was essentially a part-time activity. The loom and the spinning wheel could be employed with the minimum of preparation, particularly in winter when agriculture was at a low ebb, or even in summer on a daily basis when weather conditions were

unfavourable to work in the fields:

"Dans d'autres saisons l'homme qui a labouré vingt raies avant de diner et qu'une pluie soudaine force à rentrer, monte son metier et fabrique encore dans sa journée quelques annes de toiles."[23]

(2) a further advantage of the domestic textile industry was its capacity to employ the whole family. Children were taught to spin at an early age ; weaving was usually a male preserve and spinning the work of women and children.

(3) finally little fixed capital was needed to enter the trade. In 18th century Lancashire the value of a pair of looms was less than a pound and most weavers owned their looms.[24]

(2.8) The Textile Industries: the range of textile industries to be found in Lancashire and Beaujolais in the pre-industrial period was considerable while each branch of the industry had its own history and set of circumstances peculiar to its development. For these reasons it seems better to consider the textile industries of these two regions separately.

(1) Lancashire: at the start of the 17th century there were three major branches of the textile industry in Lancashire: wool; fustian; and linen.

(i) Woollen Industry: the area specializing in the woollen industry was located along the eastern Pennine fringe of Lancashire and extended into the West Riding. This area included Rossendale. The industry had become well established in the 15th century in the hilly districts of Blackburnshire and Salfordshire and Burnley and Colne had fulling mills in the 13th century.[25] In Rossendale the industry only became important after 1507, when the disafforestation

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23 Brisson op.cit. p 211.

24 D.A.Bythell: "The Hand-loom Weavers." 1969 p 32.

25 Tupling op.cit. p 166.

order led to large scale colonization. During the 17th century the woollen industry established itself firmly in Rossendale as the staple means of livlihood for an increasing percentage of the population. The industry was centred on the Roch and Irwell valleys, and until ousted by fustians the woollen industry was important around Bolton.

Until the end of the 18th century the principal organizing centre and source of capital was Rochdale: the town was the headquarters of merchants, chapmen and wool-staplers as well as a centre for fulling, dyeing and finishing. Rossendale lay within the hinterland of Rochdale and for most of the 18th century was in a position of economic dependence on the town.[26] The importance of the woollen industry in Rossendale is evident by the frequency with which woollen weavers are mentioned in parish registers and in wills and inventories. However, towards the end of the 18th century Rossendale emerged as an autonomous industrial region. In 1795 Aitken[27] observed that 40 years before the people of Haslingden "were chiefly employed by monied men at Rochdale" but that by the 1790's Haslingden had acquired its own market and group of entrepreneurs willing to finance and invest in the local woollen and emergent cotton industries. Aitken gives a valuable survey of the distribution of the wool and other textile industries in Lancashire towards the end of the 18th century. The chief centres of the woollen industry at this time were: Burnley, Colne, Haslingden, Newchurch-in-Rossendale, Oldham, Staleybridge, Ashton-under-Lyme, Bury, Tyldsley and Rochdale.

(ii & iii) Fustian and Linen Industries: the fustian and linen industries were concentrated in transitional zone between the Pennine Massif and the Plain of Lancastria, though they were also well

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26 Tupling op.cit. p 170.

27 J.Aitken: "A Description of the Country from Thirty to Forty Miles round Manchester." 1795 p 276.

established in parts of the Triassic plain. The linen industry antedated the fustian industry though its importance was gradually eroded by the latter in the course of the 18th century. At Walton-le-Dale for example, the majority of families at the beginning of the 18th century were engaged in the linen industry. During the later part of the century linen weavers became increasingly rare and fustian weavers correspondingly more numerous. Later, cotton acquired pre-eminence.

The fustian industry was the precursor of the cotton industry. Before 1770 and the spinning inventions that made possible the production of cotton yarn for both weft and warp, there were virtually no English weavers producing all cotton cloth.[28] The fustian weavers using a mixture of linen and cotton came closest to it. The earliest reference to the use of cotton in Lancashire is thought to be in 1601, when a George Arnold appeared before the Quarter Sessions at Bolton. Arnold's trade is described as that of fustian weaver.[29] By 1641 the fustian industry was firmly established in Lancashire, its expansion taking place at the expense of the linen and woollen trades.[30] Aitken mentions the linen industry in connection with the following towns: Preston, Kirkham, Standish and Warrington. The fustian industry was more widespread though its actual distribution is not easily defined as it is often referred to rather confusingly in the contemporary literature as the cotton industry. The Darwen Valley and Blackburn area appear for most of the 18th century to have been dependent on fustian rather than on the wool that dominated the local economy of the Rossendale Valley just

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28 Bythell op.cit. p 8.

29 A.P.Wadsworth & J. de L.Mann: "The Cotton Trade and Industrial Lancashire." 1931 p 15.

30 The woollen industry's output expanded 13-14 percent 1740-70 but only 6 percent 1725-1800. See Bythell op.cit. p 46.

across the Darwen-Irwell watershed.

(iv) Cotton: only for a brief period was the cotton industry a part of the domestic textile system. The rise of the industry dates from the 1770's and the invention of improved spinning machinery. The spinning branch of production rapidly became factory-based in the late 18th century though weaving remained a domestic industry until the perfection and widespread adoption of the power-loom after 1830. The expansion of the cotton industry took place on an unprecedented scale. The enormous demand for labour promoted the decline of the wool and linen trades and led to the so-called 'golden age' of handloom weaving in the period c1800 to c1820. William Radcliffe's description of the Cheshire village of Mellor gives some indication of conditions at this time:[31]

> "the great sheet anchor of all cottages and small farms was the labour attached to the hand-wheel.....it required six to eight hands to prepare and spin yarn.....sufficient for the consumption of one weaver.....From 1770-1788 a complete change was gradually effected in the spinning of yarns; that of wool had disappeared altogether, and that of linen was also nearly gone: 'cotton, cotton, cotton was the almost universal material for employment.
>
> The next fifteen years viz. 1788-1803 I will call the golden age of this great trade.....it was the introduction of mule yarns at this time.....producing every description of clothing that gave a preponderance of wealth to the loom.
>
> The fabrics made from wool and linen vanished, while the old loomshops being insufficient, every lumber room, even old barns, cart houses and out-buildings of any description were repaired, windows broke through the old blank walls, and all fitted up for loomshops. This source of making room at length quickly exhausted, new weavers' cottages, with loomshops rose up in every direction."

The cotton industry became firmly implanted in Rossendale in the late 18th century. Aitken, discussing Haslingden, remarks that the "cotton trade has.....been introduced within a few years, particularly the branch for making twists for warps" which resulted in the construction of several factories in the town.[32]

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31 Quoted in Baines' "History of Cotton Manufacture." 1834 pp 337-39.

32 Aitken ibid.

(2) Haut Beaujolais: in terms of the variety of textile manufacture, the domestic textile industry of Haut Beaujolais was far more heterogeneous than that of Rossendale and Lancashire. The situation was one of diversity where virtually each commune had its own specialist production.

(i) Linen and Hemp: the linen and hemp industries were two of the earliest forms of production in the region. The yarn, acquired from the surrounding regions of the Forez, the Dombes and the Saône Plain, was woven during the winter months into an extremely coarse cloth of little value. In 1573, Nicholas de Nicholay, discussing the manufactures of Lyonnais, Charlieu, Forez and Beaujolais wrote:[33]

"il y a plusieurs bons tisserands, qui font grand train de toiles de chanvre, de lin, des toiles étroites, claires et blanches, lesquelles sont enlevées es foires de Lyon."

In the 17th and 18th centuries linen became the leading fabric woven in Haut Beaujolais and several types of cloth were named after the commune in which they were manufactured (e.g. Beaujeu, St Jean-la-Bussière, Regny). Later in the 18th century linen was replaced by fustian, as in Lancashire.

(ii) Fustian: the fustian industry was introduced into Lyon as early as 1580 but only established itself in Haut Beaujolais early in the 18th century. Its slow diffusion into Beaujolais and the surrounding 'pays' is attributed to the high cost of labour in Lyon as well as the imposition of restrictive custom laws on imported yarns from Italy.[34] In the rural areas the cost of labour was cheaper and it was hoped that the population would quickly acquire the skills of cotton spinning. In 1734, as a result of the lifting of restrictions on the spinning of cotton in the region, cotton spinning was introduced. Normandy spinners were brought into Haut Beaujolais and the industry expanded rapidly.

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33 Houssel op.cit. p 132.

34 Gallois 1895 op.cit. p 302.

(iii) Silk: the silk industry was introduced into Lyon from Italy and became important from the 16th century onwards. In 1540, Lyon was declared an entrepot for silk in France and the industry remained concentrated in the city until the 19th century. Information relating to the industry is contained in a questionnaire sent from the Minister of Agriculture to the Prefect of the Rhone in 1810, which enquired into the industries of the principal towns of the departement.[35] The two main industries were the manufacture of silk and muslin. The silk industry in its various forms employed around 70,000 looms, 40,000 in Lyon and the remainder in the small towns and rural areas scattered in the départements of Rhône, Loire and Isère. The Prefect in his reply to the Minister explains the distribution of the silk industry as follows:

"Autrefois cette industrie était centralisée dans Lyon et les communes suburbaines actuellement réunies à la ville. L'extension qu'elle a prise et la nécessité de fabriquer à bon marche pour soutenir la concurrence qui lui font la Suisse, la Prusse, l'Angleterre et l'Autriche ont forcé nos fabricants à monter des metiers dans les campagnes et dans les petites villes voisines, où la vie est moins chère qu'à Lyon, et par conséquence le prix de la main d'oueuvre est moins élevé."

The censuses of 1836 and 1872 show that there was considerable dependence on silk embroidery and silk weaving in the rural communes of Haut Beaujolais, though areas in closer proximity to Lyon, such as L'Arbresle and St Laurent de Chamonsset showed proportionately greater dependence.

(iv) Muslin: the muslin industry was centred on Tarare and was first introduced there in 1756 by George Simonet. The first attempts were not very successful but later muslin weavers were imported into the town to teach the new techniques.[36] By 1789 the industry was employing some 600 looms; by 1803 2,000; and by 1810 5,000.[37] The

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35 Serie M des Archives Départementale du Rhône.

36 Bordas op.cit. p 46.

37 Serie M ibid.

growth of Tarare was correspondingly spectacular. In 1804 Tarare was the only centre of muslin manufacture in France. Figure 2.1a shows the muslin industry in 1819 to have been widely distributed around the main organizing centre of Tarare. The industry was protected and fostered by the government in the early 19th century in Tarare to the exclusion of all other branches of the textile industry. A report sent by the 'Chambre Consultative des Manufactures de Tarare' to the central government in 1805 described the industry as prosperous, and contrasted the situation with the accute depression of 1801.[38] The Prefect in 1801 had found the industry " almost in a state of decay....its prices exhorbitant.....while the price of foreign muslin was moderate." In that year the total labour force was 650: four years later it was 4,200. This startling recovery followed the Arrête of the 6 Brumaire year 11 (1803) when the government intervened directly in an effort to stimulate industrial growth. By 1805 the prosperity of the industry was such that there was fear that Lyon merchants might attempt to enter the industry and take over part of the trade. Always, however, there was the threat of foreign competition and a return to the depressed conditions of previous years. In its report the Chambre Consultative lobbies the government for higher tariffs against foreign producers and for the freedom to introduce new forms of manufacture, in particular cotton spinning. The fluctuating fortunes of the muslin industry is again evident in table 2.6 below.

Table 2.6 Canton of Tarare: Muslin Manufacture 1810-11.[39]

Semestre	Spinners	Weavers	Pieces mfrd.
1 1810	-	5,000	40,000
2 1810	-	2,500	20,000
1 1811	-	2,500	30,000

[38] Serie M.

[39] "État de Situation des Fabriques et Manufactures de Coton." Serie M.

The dramatic fall in production after the first semestre of 1810 is attributed to an outbreak of machine breaking of foreign spinning machinery, a phenomenon by no means unknown in contemporary Lancashire. The fact that a large part of the labour force remained active was due to the introduction of cotton zephyers which required considerable labour. In 1819 the Tarare muslin industry employed over 35,000 people, recruiting labour as far distant as Nevers, Gannat, St Etienne and Moulin.[40] (fig. 2.1a)

Table 2.7 Employment Structure Tarare Muslin Industry.[41]

Weavers	10,000
Labourers	10,000
Lattice Workers	300
Bleachers	300
Embroiderers	15,000
Manufacturers	300
	35,900

By 1819 the scale of production in the muslin industry was considerable though at this stage the industry was based on the hand-loom and mechanical spinning was comparatively insignificant. Power-loom weaving was not introduced until 1880.[42] The industry showed rather more secular fluctuation in output than either the cotton or silk industries because of the caprice of fashion. Tarare however, developed other industries in the course of the 19th century including silk, cotton and velvet.

(v) Cotton: the cotton industry superceded the fustian industry of the 18th century and during the 19th century became the most important form of textile manufacture in Haut Beaujolais. Thizy was the centre of the industry and in 1819 mule jennies were in use which no longer made the import of yarn from Paris and northern France necessary. Raw cotton was imported from the Levant through

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40 Report from the Sous-Préfet of Villefranche to the Prefect of Rhône. 1819 Serie M.

41 ibid.

42 Bordas op.cit. p 48.

Marseille and distributed to spinners and weavers in Beaujolais. A wide range of cotton goods was manufactured: guineas and calicos at Amplepuis; guineas and siameses at Cours; and calicos, guineas, basins, fustians and muslinettes at Thizy.[43] Power-loom weaving was not introduced on a large scale until after 1870.

Table 2.8 Cotton Manufacture 1819.[44]

		no. spindles	yarn output kgs	looms	spinners	weavs.	others
Amplepuis	1	75	4,500	550	-	-	660
	2	30	1,800	400	-	-	510
	3	10	650	350	-	-	407
Cours	1	60	3,000	-	60	450	440
	2	20	1,500	-	25	300	440
	3	8	400	-	10	200	212
Thizy	1	260	18,200	1560	260	1560	2400
	2	260	18,200	1560	180	780	1300
	3	260	18,200	1560	20	100	1200

(vi) Wool: the woollen industry was concentrated in Cours and in contrast to other branches of the textile industry its development was fairly recent. Because of this late development the industry was always fully mechanized with spinning, weaving and carding machinery being brought into the region after 1850. The industry reached a peak in the 1880's with the construction of several factories. Its declining prosperity in the early 20th century is reflected in a slowing of the population growth rate and substantial net migrational losses. Cours specialized in cheap, woollen blankets for export to the colonies.[45]

(2.9) Markets and Hinterlands: it is tempting to see the textile regions of Lancashire and Beaujolais as corresponding to the commercial and industrial hinterlands of Manchester and Lyon respectively. In the case of Manchester it would seem plausible to tentatively accept such a relationship: in the case of Lyon there are

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43 "Mémoire de J.M.Roland de la Platière." 1913 p 19.

44 The data contained in tables 2.7 and 2.8 are only approximate: "je ne certifie point la strict exactitude de mon calcul, mais je garantis qu'il approche...la verité." Sous-Préfet of Villefranche.

45 Houssel op.cit. p 143.

important qualifications to this generalization. The evidence to support the contention that the functional region of Manchester corresponds to the textile region of Lancashire can be summarized thus:

(a) The Lancashire textile industry, and in particular the cotton industry was organized from Manchester. This town was the major source of raw materials and the chief market for the sale of cloth and yarn as well as being the largest manufacturing centre in the region in its own right. The evidence of trade directories shows its hinterland was vast: in 1788 and 1813[46] merchants were regularly visiting the Manchester market from places as far afield as Bradford, Halifax, Chapel-en-le-Frith and Colne.

(b) There is agreement that the key figure in the cotton industry was the Manchester merchant.

(c) Economic and demographic change in many instances appears to have originated from Manchester. The factory system first established itself in the vicinity of Manchester: the earliest spinning mills were located here and only later were they diffused into the Pennine valleys of East Lancashire. This is equally true of the first 'combined' firms specializing in both spinning and weaving which began to appear after 1825. The power-loom census of 1835 shows the marked concentration of power-looms around Manchester and their virtual absence in areas to the north and east. By mid-century these areas had become part of the traditional weaving belt which embraced the Rossendale and Darwen valleys.

(d) Economic development stimulated demographic change, and the spatial chronology of population growth tended to reflect that of economic change. The period of most rapid population growth took

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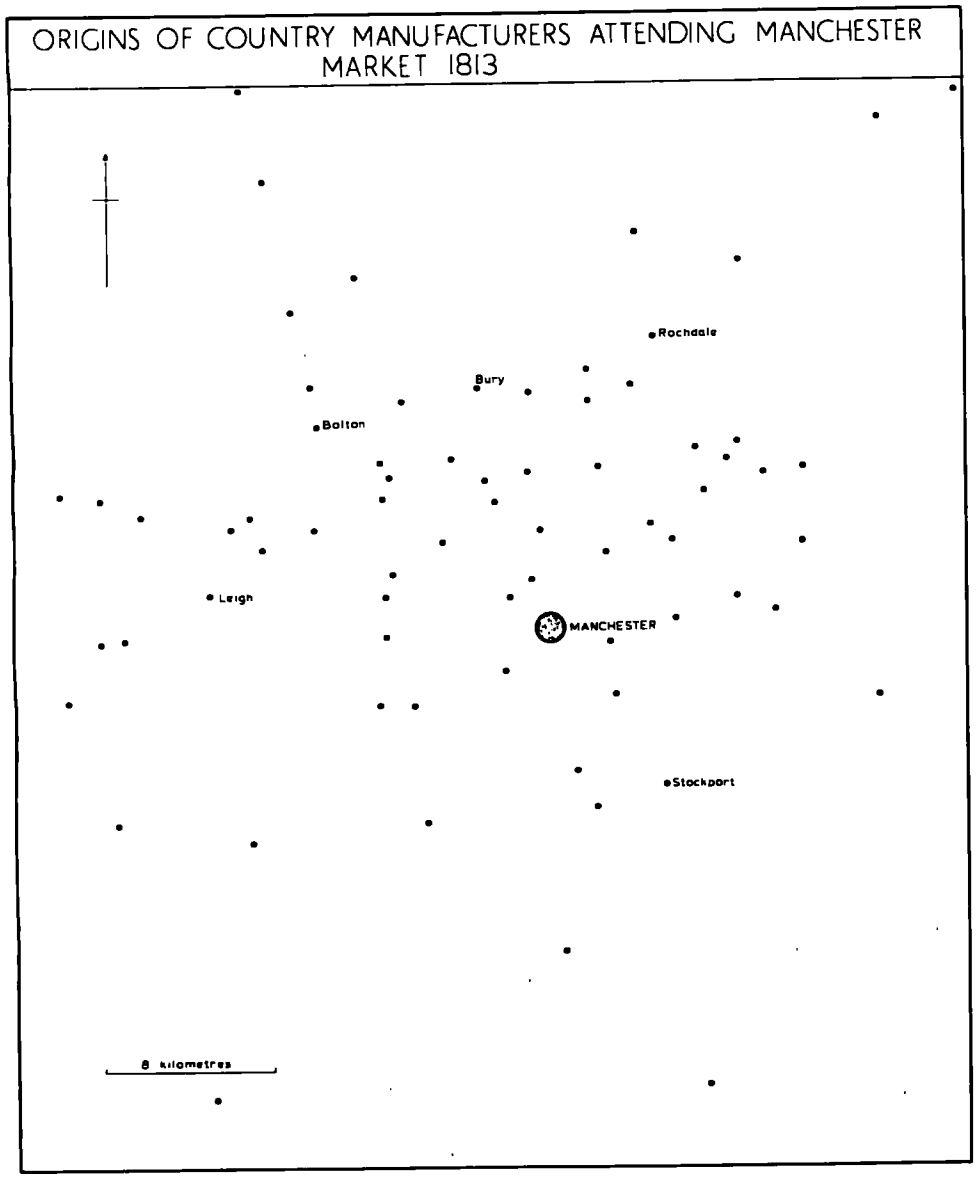
46 "Lewis's Directory for the towns of Manchester and Salford." 1788. Pigot: "Manchester and Salford Directory for 1813."

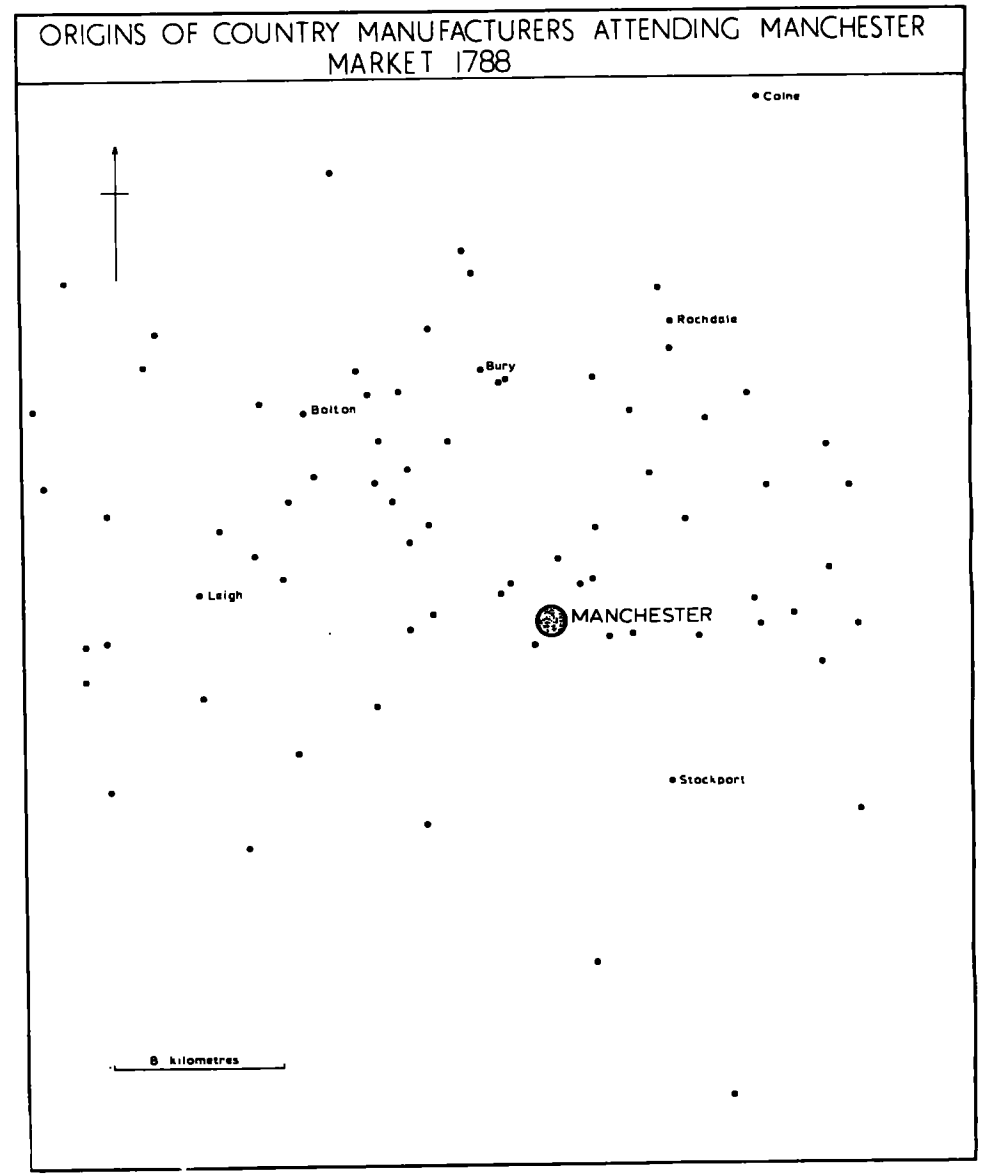
place earlier in the immediate environs of Manchester than in more distant areas such as Rossendale.

The implication is that Manchester was the principal centre for the input of capital and the diffusion of innovation and change in the spatial system of the Lancashire textile region. In a period when transportation costs formed a large proportion of total production costs, the profitability of any enterprise might be thought of as being inversely proportional to its distance from the main point of input (i.e. Manchester). Yet if there are grounds for accepting such a model, then equally it must be emphasised that it is a simplification which does not fit all the facts.

First, even accepting Manchester as the major source of input and output in the industrial system there were other commercial centres such as Bolton, Blackburn and Rochdale which had a very real degree of autonomy from Manchester and which functioned as markets at a smaller scale within their own sub-systems. In this way they tended to 'short-circuit' the Manchester market and control a significant part of the total textile trade of the region. This was especially so in branches of the textile industry outside cotton. For most of the 18th century, Rossendale, as we have seen was largely dependent on Rochdale, and not Manchester. Aitken's survey of Lancashire in 1795 gives clear evidence of the plethora of small textile markets that existed at this time. Trade directories of the early 19th century reinforce the view that there was a considerable proportion of trade conducted in complete independence of the regional capital. In Lewis's Directory of 1788 for example, there is no reference to any Preston, Darwen, Burnley or Rossendale manufacturer visiting the Manchester market though in each of these places textiles was the leading industry. The towns in the northern and eastern parts of the county were, if this evidence is reliable, too


ORIGINS OF COUNTRY MANUFACTURERS ATTENDING MANCHESTER MARKET 1813
Rochdale
Bury
Bolton
Leigh
MANCHESTER
Stockport
8 kilometres

A


ORIGINS OF COUNTRY MANUFACTURERS ATTENDING MANCHESTER MARKET 1788
Colne
Rochdale
Bury
Bolton
Leigh
MANCHESTER
Stockport
8 kilometres

B

Figure 2.3

distant from Manchester to maintain direct commercial relations. In 1788 manufacturers visiting the Manchester market were principally drawn from a radius of 25 kilometres of the capital (figure 2.3a). Although by 1813 manufacturers were drawn from greater distances, the general distributional pattern remained largely unaltered (fig.2.3b).

If we accept the smaller markets as an important and intrinsic part of the regional system, then the problem becomes that of explaining their degree of dependence on Manchester. To what extent was the yarn sold in the smaller markets initially derived from Manchester? To what extent was the cloth sold in these subsidiary centres bought by Manchester dealers and eventually sold at the Manchester market? There is unfortunately no documentary evidence which can tell us of the importance of such transactions.

It is possible that the boundary of the Lancashire textile region was in large measure a function of distance from Manchester. In other words the extra cost of transportation with increasing distance from the regional capital was the determining factor in the profitability of spinning and weaving in the pre-industrial period. This theme will be discussed more thoroughly in section 2.10 though it is worth remarking that in a sense it is only partly true for Smith[47] has shown that labour costs declined with increasing distance from Manchester. (table 2.9).

Table 2.9 Average Weekly Wages Paid to Mule Spinners.[48]

	Manchester	Bolton, Oldham, Preston.
1823	27/7	23/-
1827	26/-	22/6
1830	28/6	24/9

Some employers therefore considered it cheaper to suffer increased transport costs by despatching their yarn or cloth goods from the

47 R.Smith: "Manchester as a Centre for the Manufacturing and Merchanting of Cotton Goods."1820-30. Birmingham Univ.Hist.Jnl 4, 1953-54

48 Smith op.cit. p 48.

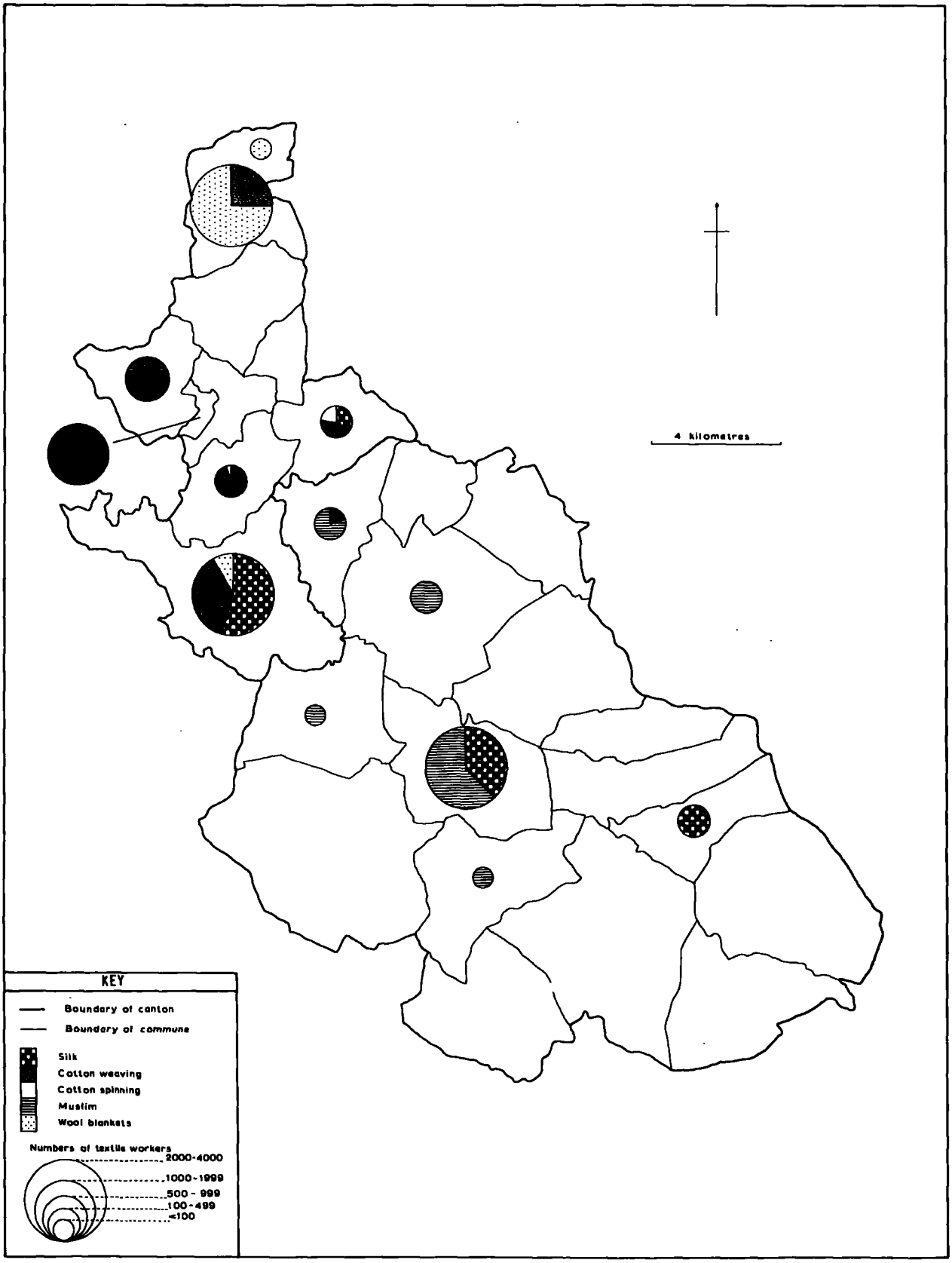


Figure 2.4

Structure of Textile Industry: Thizy 1880.

smaller Lancashire towns and villages to the Manchester market than pay the higher wage costs necessitated by working in Manchester.[49] Operations could thus be extended over a wider field than would have been possible given uniform labour costs throughout the region. Although this complicates the simple model that sees the areal extent of production as a function of distance from a nodal point, it does not invalidate the general principle for increased transfer costs will eventually outweigh reduced labour costs and the point of marginal productivity will form the boundary of the region.

In the 18th century before the invention of the mule and jenny, the enormous demand for yarn made the extension of operations to considerable distances from the main organizing centre obligatory. With four spinners being required to keep one weaver in employment it is not surprising to learn for example that Halifax entrepreneurs employed spinners as far away as Long Preston, Wigglesworth, Austwick and Clapham in Upper Ribblesdale and the Craven district of the West Riding.[50]

The relationship of Haut Beaujolais to the hinterland of Lyon is less obvious than that of Rossendale to Manchester. The role of government in France in stimulating economic development in the provinces was considerable, and in many instances has greatly modified industrial locational patterns which in Britain can be seen almost entirely as a response to geographic, distance and profitability factors. Until 1734 the people of Beaujolais were prohibited from spinning their own cotton yarn: yarn had to be imported from the Levant in order to maintain the quality of the finished cloth. At the same time the government was much influenced by the ideas of the Physiocrats who believed that all wealth derived ultimately from

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49 Smith op.cit. p 47.

50 T.W.Hanson: "The Story of Old Halifax." 1920 reprinted 1968 p 204.

agriculture and that excessive interest in industry would in the long run lead to economic disaster. However, the relaxation of the law against cotton spinning in Beaujolais in 1734 produced rapid expansion in this sector of the textile industry, and the importation of skilled spinners from Normandy.[51]

There can be no doubt that the industrial development of Haut Beaujolais owed a great deal to the proximity of Lyon and the willingness of Lyonnais capitalists to invest in commerce and industry in the region. It has already been shown that the diffusion of the cotton industry into Haut Beaujolais and surrounding regions was a deliberate attempt on the part of entrepreneurs based in Lyon to reduce the burden of the onerous costs of labour in the regional capital. The silk industry was introduced into Haut Beaujolais for the same reason though unlike the cotton industry it always remained under the control of the Lyonnais merchants.

If initially the fustian and cotton industries owed their development to the proximity of Lyon, Haut Beaujolais eventually gained a degree of autonomy from the regional capital and a series of small market centres emerged within the hinterland of Lyon. The extent of the dependence of these small markets on Lyon is unknown, though doubtless it was considerable, with Lyon capital and entrepreneurs playing a role similar to that of Manchester in 18th century Lancashire. Fustians manufactured in Beaujolais in the 17th century were marketed in Lyon, but after the mid-18th century the interest of the Lyon merchants dwindled in proportion to their increasing interest in silk, with the cotton industry becoming centred around the small towns of Haut Beaujolais. Everywhere, in Thizy, Amplepuis, Chauffailles, Villefranche and Tarare, commercial affairs became

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51 Brisson op.cit. p 222.

increasingly the preserve of the local bourgeosie.[52] Thizy was the oldest market and the longest established commercial centre, having obtained its charter as a 'ville-franche' in 1150. Its importance is illustrated when in 1729 three of the five offices set up to control the production of cloth in the region were established there.[53] In 1783, nearly 64,000 pieces of cloth were sold in the markets of Thizy, Amplepuis, Lay and Regny, most of which eventually found its way to the markets of Lyon and Roanne.[54]

Haut Beaujolais lay within the commercial hinterland of Lyon in the same way that Rossendale was contained in Manchester's hinterland. In neither region would industrial development have taken place without the employment of capital and the activities of entrepreneurs based on the regional node. In both regions industry spread into rural areas in search of cheap labour; in Beaujolais this movement resulted from a carefully planned decision on the part of entrepreneurs, whereas in Lancashire it was more probably a response to prevailing market forces. Within the functional regions of Lyon and Manchester there were subsidiary regions with smaller central places possessing significant autonomy from the regional capital. The commercial independence of such centres was, however, largely superficial and connections and links with the regional capital remained strong. In France the analysis of the boundaries of such functional regions is made difficult by the role of government which set up barriers to the free movement of trade. In Lancashire, as we shall see in the next section, there is more justification for identifying such boundaries, though here the picture is complicated by the reduced cost of labour with increasing distance from

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52 Bordas op.cit. p 44.

53 Houssel op.cit. p 134.

54 Houssel op.cit. p 135.

Manchester as well as the numerous and important small market centres for cloth and yarn.

(2.10) Locational Factors in the Distribution of Rural Industry: at a national scale rural industries exhibit a scattered distributional pattern. In pre-industrial England nearly every county was involved in some branch of rural industry: Bedfordshire with its manufacture of osier baskets and reed-matting; Essex with its production of baizes in the Colchester region which towards the end of the 18th century employed some 20,000 people; Kent with its silk manufacture centred on Canterbury and the surrounding villages; and many others too numerous to mention here.[55] This scattered geographic distribution was determined by a number of locational factors, not least in the early period being the need to be fairly close to the major market. However, rural industry on the scale existing in Rossendale and Haut Beaujolais in the 18th century represented a significant step forward from the relatively simple level of supply and demand where the major market was the local agrarian community. Production was not merely a response to local demands but to the demands of a national, and increasingly an international market. The labour force, at first recruited on a part-time basis from agriculture became gradually more dependent on industry until by the mid-18th century there were large rural communities almost entirely dependent on industrial production. Such communities were the precursors of the urban populations and factory workers of the 19th century and indeed J.D.Chambers has referred to them as the 'rural proletariat'.[56]

If we now consider the locational factors behind the distribution of rural industries at a smaller scale, then the most

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55 For a fairly exhaustive list see Lord Ernle: "English Farming Past and Present." 1912 pp 308-310.

56 J.D.Chambers: "Enclosure and Labour Supply in the Industrial Rev." Econ.Hist.Rev. 2nd Series Vol.V 1952-53 p 323.

striking fact which emerges from even the most superficial analysis, is the attraction of rural industries to areas of low agricultural potential. Such areas were often impoverished uplands, as in the case of Rossendale and Haut Beaujolais, but equally lowland areas such as the infertile sandy districts of Flanders or the heathlands of the southern and eastern Netherlands repelled agrarian communities but at the same time proved attractive to industry. It would appear therefore that a poverty of physical resources, incapable of supporting intensive cultivation, played an important role in the location of rural industries. Of course there were extensive areas of underdeveloped, impoverished mountain and plain in Western Europe which were unattractive to both industry and agriculture and remained underdeveloped and underpopulated. Thus, other factors are clearly involved in the location of these industries. There are probably three such factors: the availability of capital; the availability of labour; and the development of transport networks.

(1) Capital: the availability of liquid capital, and above all the availability of credit was indispensible to the development of industry. Chambers,[57] writing on the 16th century woollen industry of Wiltshire quotes the following remark: "the oil of credit greased every cog in the ...industry, from the purchase of wool to the disposal of cloth." Although the labour force in the domestic textile industries generally owned its own tools and machinery, it did not own the raw materials of manufacture and in this sense was proletarian in character.[58] Credit was required on the part of the entrepreneurs

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57 Deuxième Conférence Internationale d'Histoire Économique. Aix-en-Provence 1962. J.D.Chambers: "The Rural Domestic Industries during the Period of Transition to the Factory System, with special reference to the Midland Counties of England." p 426.

58 This was particularly the case in the domestic textile industries where looms and spinning wheels were inexpensive and little fixed capital was needed on the part of the operator. See Bythell op.cit. p 32.

to purchase raw materials and to finish manufactured articles before distribution to markets.

The geographical distribution of capital tended to be concentrated in a limited number of towns with an important merchant class. This group, in association with financiers and traders were willing to adopt the role of entrepreneur and were found chiefly in regional centres such as Manchester, Lyon, Norwich, Ghent, Nottingham, Osnabruck etc. We might reasonably expect therefore to find a polarization of industrial activity in the hinterlands of these and similar towns.

(2) Labour: "there seems to be no doubt that the general distribution of the rural textile industries was largely determined by the search on the part of the owner of circulating capital for supplies of cheap labour."[59] Labour costs, at a time when technical conditions were relatively unsophisticated, were the most important element in overall production costs. In addition, greater input of labour into the production system was the only means by which entrepreneurs could increase the scale of their operations - an economic fact that in periods of recession could cause considerable hardship. However, the general shortage of labour in 18th century England meant that such crises were avoided. Crouzet[60] explains the numerous inventions that were the basis of the industrial revolution in England, as a direct response to the problem of labour shortage. In France, labour supplies were always plentiful, and this problem did not occur: expansion of output was not initially achieved by mechanization but by the simple expedient of employing more labour. Yet, before the great era of invention, where were supplies of cheap labour, sufficient

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59 Chambers op.cit. 1962 p 433.

60 F.Crouzet: "England and France in the 18th Century: a comparative analysis of two economic growths." first pub.1966. Reprinted in Hartell ed.: "The Causes of the Industrial Revolution in England." p 171.

to satisfy the demands of an expanding market to be found?

Towards the end of the 17th century, and throughout the 18th century there was a clear trend of natural population growth in Western Europe. In regions of limited agricultural potential, already fully colonized, rapid natural increase produced a steady stream of emigrants seeking areas of better employment opportunity. These movements were not always of a permanent nature and indeed the bulk of migrations was probably temporary or seasonal. 18th and early 19th century migrants to Lyon from the Massif Central, the Jura and the Alps were of a predominantly temporary nature.[61] Out-migration under these circumstances suggests some degree of rural over-population with substantial unemployment and underemployment in agriculture. It was such areas that possessed reservoirs of cheap labour which could profitably be tapped by entrepreneurs and employed in rural industry.

We are now in a position to formulate a theory concerning the location of rural industry in the early modern period. If we regard set A as all those rural areas possessing labour surpluses and set B as urban centres with sufficient capital resources and an entrepreneurial class willing to invest in rural industry, then we might expect the geographical distribution of this industry to be explained by the intersection of these sets:

$$\text{Location} = A \cap B$$

The precise location has further geographical interest as over-population is often associated with environmental factors. Finally, in considering the boundaries of single-feature regions formed by rural industries we must look briefly at the third locational factor - transport.

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61 A.Chatelain: "La Formation de la Population Lyonnaise l'apport d'Origine Montagnarde." Rev.de Geogr.de Lyon 1954 XXIX pp 91-116.

(3) Transport: industry tends to organize itself around a commercial nodal point. The hinterland thus formed can be defined as the 'field' of industrial production and its extent is likely to be some function of transfer costs. 18th century transport being slow and costly, exerted a clear limit, in spatial terms, on the geographical profitability of industry. The central node is the source of capital and raw material input into the economic system and equally forms the outlet of the production system. Labour, distributed in the hinterland of the commercial node but geographically divorced from this main input source, was linked to the node by the existing transport network. With transfer costs a significant proportion of total production costs the profitability of rural industry was inversely proportional to increasing distance from the commercial node. The boundaries of this industrial region were not rigid and unchanging, but would tend to show fluctuation over time in response to market demand and the concomitant demand for labour. If we assume that in the more central locations closest to the commercial node, labour was fully employed, then in theory output could only be expanded by bringing into production labour in more peripheral locations, where profit margins were lower. Peripheral communities of this sort must have been markedly susceptible to changes in the pattern of demand. For this reason it seems unlikely that there was the same narrow dependence on industry as in more central locations. It is also feasible that these central locations were economically more attractive than peripheral areas and for this reason may have attracted a steady stream of short-distance migration long before the industrial revolution. Seen in these terms the industrial revolution would merely reinforce population movements that may have been in existence throughout the 18th century.

In the opinion of the author the relationship of the

regional extent of rural industry to distance from a central node may be expressed in the following formula which delimits the boundary of such a region:

$D^n = f(p) + k$ where D is distance from the regional node.
p is profitability.
n an exponent of D related to transfer costs.
k is marginal profitability.

Chapter 3: Population Change and the Domestic Textile Industry in the Pre-Censal Period.

(3.1) The aim of this and the succeeding two chapters, is to describe and account for the distinctive demographic and geographic characteristics of those communities primarily dependent on the domestic textile industry in Rossendale and Beaujolais in the pre-censal and early censal periods. Before considering the processes of population change in the pre-censal period at the regional scale, a brief resume of the principal features of the demography of 18th century Britain and France will be given as well as a critique of the nature and value of documentary sources for demographic study at this period.

(3.2) The Demographic Revolution and Population Change in 18th Century Britain and France: the 18th century assumes special importance in the study of population in history as the transitional period between the highly distinctive demographic regimes of the Middle Ages and Modern times. Throughout Western Europe, the 18th century was a period of rapid and accelerating population growth. Between 1700 and 1781, the population of England and Wales increased by nearly 30 percent, while at the same time France's population showed an increase of almost 35 percent.[1] Population growth of this magnitude was not a new phenomenon in Europe: the 12th, 13th and 16th centuries had equally been periods of demographic expansion, but each had been quickly followed by wave-like progressions of stagnation and decline. According to Helleiner,[2] 18th century growth was initially no more than a continuation of this trend. However, what was unique about the 18th century was the continous and

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1 Crouzet op.cit. p 154. England's population increased from 5.8 to 7.5 millions in this period: France's from c20 to 26 millions.

2 K.F.Helleiner in: "Cambridge Economic History of Europe." Vol.IV. p 97.

sustained nature of population growth. In the face of widespread economic and technologic development the classic Malthusian model of demographic change became increasingly irrelevant.

(i) The Dynamics of Change: in the absence of significant migratory movements on an international scale, the populations of 18th century Britain and France can be considered as closed systems, and change as a function of the interaction of mortality and fertility, producing an excess of births over deaths.

There is a concensus among French demographers that the demographic revolution in France (and indeed in Western Europe) resulted from a marked decline in mortality. This decline did not result from improvements in health or hygiene[3] but from the virtual disappearance of demographic crises. Prior to the 18th century the familiar demographic regime was one of frequent crises of subsistence caused by harvest failure and accompanied by famine and disease. The high mortality rate of such years was sufficient to cancel out the natural increases of preceding years and restore a situation of equilibrium. Explanation of the sudden disappearance of these periodic crises is not easy though it seems likely that the principal factors involved were largely fortuitous, among which the most important was the disappearance of plague. In 18th century England plague was practically unknown, and the last serious outbreak in France took place in Marseille in 1720, and affected only a small part of Provence. Thus, when subsistence crises occurred, they were no longer exacerbated by the visitations of plague on weakened populations. At the same time there is no doubt that improvements in agriculture, which had been taking place for a century or more began to have effect in increasing food production, while improvements in marketing and transportation mitigated the effects of localized food shortage.

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3 T.McKeown and R.Brown: "Medical Evidence Related to English Population Changes in the Eighteenth Century." 1955. Reprinted in Drake ed. op.cit. pp 40-72.

Most regional studies in France have shown that mortality, (particularly infant mortality) declined markedly after 1750. Declining infant mortality led to population growth not simply through the widening of the birth-death differential, but also by ensuring that a larger percentage of children survived into the reproductive age groups, thereby producing an increase in the crude birth-rate.

British demographers have generally been reluctant to apply the mortality-based model of population change. There has been a tendency to regard the demographic revolution in Britain as being essentially different from that on the continent and to search for internal causes of change. The theory of the decline of demographic crises by no means commands the same degree of support as in France. It is argued that demographic crises in Britain were less severe and therefore played a less important role in the population regime. For example, the "Grand Hiver" of 1708-09 that caused widespread suffering on the continent, passed virtually unnoticed in England. However, Flinn[4] stresses the need for more research into this aspect of the subject in Britain. Meanwhile, interest in mortality has been recently revived in an article by Razzell[5] which showed the introduction of inoculation against smallpox to have been on a far greater scale in 18th century England than had been previously supposed. He argues that the whole of the increase in population in the second half of the 18th century can be attributed to this single innovation.

Nonetheless, opinion has tended to favour the role of fertility rather than mortality as the major stimulus to population growth in Britain. Krause states that "death-rates changed but little

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4 M.W.Flinn: "British Population Growth 1700-1850." 1970. Studies in Economic History. passim.

5 P.E.Razzell: "Population Change in Eighteenth Century England: a Re-Appraisal." 1965. Reprinted in Drake ed. op.cit. pp 128-156.

during the period 1700-1820 and the birth-rate was the major variable."[6] And nowhere among the writings of British demographers do we come across such unequivocal support for mortality as the following:

"Ce n'est donc pas le mouvement de la natalité qui commande la croissance démographique de la deuxième moitié du XVIII^{e} siècle, mais bien le recul de la mortalité, phenomène majeur de l'époque."[7]

There is general agreement that fertility remained constant in Britain and France for all but the last twenty years or so of the 18th century. In France there is, furthermore, conclusive evidence of family limitation during the Ancien Régime. Thus the demographic revolution in France comprised two major processes: (1) an appreciable decline in mortality, followed later by (2) a substantial fall in fertility. For most of the 18th century CBR's were around 40 per thousand, though it is now realized that there were considerable regional variations,[8] which suggests family limitation was not simply confined to the towns, but was widespread among the peasantry.

The work of Wrigley[9] on the Devonshire parish of Colyton indicates that family limitation in pre-industrial England was possibly widespread, and by no means unknown. However, it is the birth-rate, rather than fertility, that has commanded more attention among British demographers. In Britain the birth-rate showed secular fluctuation, and Krause,[10] Habbakuk,[11] and Deane and Cole[12] are all

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6 J.T.Krause: "Some Neglected Factors in the English Industrial Revolution." 1959. Reprinted in Drake op.cit.ed. p 119.

7 P.Guillaume and J-P.Poussou: "Démographie Historique." 1970 p

8 For example CBR's at Crulai 1675-1750 were 36/1000. At same period CBR's at Thezels and Sainghin-en-Melantois were 33 and 30 respectively.

9 E.A.Wrigley:"Family Limitation in Pre-Industrial England." reprinted in Drake op.cit.ed. pp 157-194. First pub. 1966.

10 Krause op.cit.

11 H.J.Habbakuk: "English Population in the Eighteenth Century." 1953. Reprinted in Glass & Eversely eds.: "Population in History." 1965.

of the opinion that the birth-rate rose in the second half of the century as a result of a lowering of the age of marriage, a decline in celebacy and peri-natal mortality, and that this fact explains in large part the rapid upswing in population growth in Britain after 1750.

(3.3) Sources of Demographic History in the Pre-Censal Period: the first national census in England and in France did not take place until 1801. Although there had been several attempts to hold a full census in France before this time, for both countries the 18th century is entirely pre-censal with only estimates of population totals. Statistical material of a demographic nature is derived almost exclusively from the Anglican parish registers in England, and the Catholic registers in France. In addition there also exists in France the 'Etat Civil' for the last eight years of the century, and in England a variety of documents of a quasi-demographic nature such as Lay Subsidy Rolls and Hearth Tax Returns, from which crude estimates of population totals can be obtained.

(i) Parish Registers: before the introduction of civil registration in England and Wales in 1837, and in France in 1792, vital registration was entirely in the hands of the clergy. In France the Ordonnance of Villers-Cotterets (1539) ordered the clergy to keep a register of baptisms, marriages and burials in each parish. Parish registers were, however, widely kept before this law, and several are known that go back to the 14th century. The order of 1539 was only partly effective and in 1667 the Ordonnance of St Germain-en-Laye was promulgated in an effort to reduce the deficiencies of registration. Acts of baptism, marriage and burial had to be kept in a separate register: baptisms had to be witnessed by the father, godfather and

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References continued from page 58.

12 P.Deane and W.A.Cole: "British Economic Growth 1688-1959." 1962.

godmother; burials had to be witnessed by either the two closest relatives or friends of the deceased; while in the case of marriages signatures were required from the contracting parties as well as from four witnesses. The keeping of two registers also became obligatory. The law was subsequently abused, and omissions and failure to keep a second register were common. The Declaration of 1736 largely rectified this situation, and for the remainder of the 18th century registration was comprehensive and efficient in most parishes.

In England, the systematic keeping of parish registers was first ordered by Thomas Cromwell in 1538. Before 1812 however, entries never possessed uniformity and by this date registration was becoming increasingly inaccurate. The amount of detail recorded in English registers was therefore left to the discretion of individual clergy, and more often than not tended to be extremely sparse. Only on rare occasions are data concerning age and occupation to be found.

(ii) Bishop's Transcripts: Bishop's Transcripts are a useful supplementary source of demographic data to parish registers and have been used in lieu of the latter in at least one major study of population history.[13] But as transcripts are merely copies of the original registers they can only be less accurate, though often gaps which appear in parish registers are not found in the transcripts. The chief advantage of transcripts is that they are more easily accessible than parish registers, being deposited in either the County Record Office or the Diocesan Registry, unlike parish registers which remain largely in situ in the parish churches. In addition they are generally more legible and consequently easier to aggregate.

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13 J.D.Chambers: "The Vale of Trent 1670-1800. A Regional Study of Economic Change." Econ.Hist.Rev. 1951.

(iii) The Value of Parish Register Material: one cannot expect parish registers to provide wholly satisfactory statistical data relating to population change when they were designed for quite different purposes. Parish registers are nothing more than crude inventories of baptisms, marriages and burials, and of course baptisms and burials are by no means the same thing as births and deaths. The major defect of parish registers lies in their inevitable under-registration of vital acts. Several writers have sought to remedy this defect by applying a correction factor of varying magnitude to baptisms and burials.[14] The weighting nearly always favours baptisms which tend to be slightly under-stated in the records in relation to burials.

In France, a number of factors conspired to reduce 'leakage' from parish registers to quite small proportions. First, Catholicism was almost universal and rites of baptism were enforced with a vigour that was virtually unknown in England. Second, the rise of nonconformism, so marked in England after 1750, never assumed significant proportions in France. At the 1851 census for example, nearly every commune in Haut Beaujolais had a declared Catholic population of over 98 percent. Compare this with the township of Over Darwen, which in 1800 had Methodist, Baptist and Presbyterian chapels and meeting houses, and where entries in the registers of the Independent Chapel exceeded those of the parish church. Third, the processes of industrialization and urbanization towards the end of the 18th century led to the breakdown and gross inefficiency of registration in many parts of Britain. In France this was not a problem as the industrial revolution was a 19th century phenomenon, and by the time economic change of any magnitude began to take place, France already had an effective system of civil registration.

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14 See J.Brownlee: "The History of Birth and Death Rates in England and Wales." Public Health Vol.XXIX 1916.
and G.T.Griffith: "Population Problems in the Age of Malthus." 1926.

For these reasons, French parish registers are generally a more reliable source of statistical data than their English counterparts. The value of English parish register data depends on local circumstances and on the precise use to which the data are to be put. For the purpose of establishing broad population trends for example, (the purpose for which they are used here) a consistent under-registration or 'leakage' poses no real problem. However, if 'leakages' vary from year to year then the value of the data is questionable.

(iv) The Parish Registers of Lancashire and Beaujolais: a sample of registers was examined for each region, selection being dependent on the quality of registration and the relative location of the parish concerned. The nine Beaujolais registers analysed (see bibliography) were all original documents centralized in the Archives Departementales du Rhone at Lyon. For Lancashire, original registers were only consulted for the parishes of Haslingden, Over Darwen, Brindle, Newchurch-in-Pendle and Balderstone. These documents were supplemented by material taken from the Bishop's Transcripts of the Diocese of Chester, located in the Lancashire Record Office at Preston, and by several publications of the Parish Register Societies of Lancashire and Yorkshire (for a complete list see bibliography). Both sources are inferior to the original registers but were used because: (1) English registers remain widely scattered, the majority still being located in the mother church. (2) Transcripts and published registers by comparison, are easily accessible as well as being more legible and consequently easier to work with. (3) In some cases the original registers have either been lost or destroyed. It is perhaps worth emphasising the importance of the legibility of the documents in a type of work that best lends itself to group exploitation. Furthermore, the publications of reputable parish

register societies are usually fairly reliable, as indeed are most transcripts, and certainly when the principal object of the exercise is to establish broad trends rather than absolute numbers, hundred percent accuracy is not essential.

Almost all the registers of the département du Rhône have uninterrupted runs of entries from the Déclaration of 1736 to the beginning of civil registration in 1792. The registers chosen are representative of three major types of parish: (1) parishes with either a small market town or large village e.g. Thizy, Amplepuis; (2) parishes without important nucleated settlement but dominated by the domestic textile industry e.g. Cublize; (3) parishes where agriculture was the dominant economic activity e.g. Dracé. In addition, three of the nine registers were taken from Bas Beaujolais in order to compare demographic conditions in a rich agricultural area, with those of the marginal, upland region of Haut Beaujolais. In Lancashire the registers covering Rossendale have been considered together with others taken from elsewhere in the hill areas of East Lancastria where the domestic textile industry dominated the local economy. Again, for purposes of comparison, material was taken from two lowland parishes (Halsall and Warton) located on the Lancashire Plain and in the Fylde respectively.

(3.4) The Exploitation of Parish Registers using Aggregate Techniques: there are two principal methods of exploiting parish register material: family reconstitution and aggregate analysis.[15] The former, which is an extremely lengthy and painstaking process involves the recording on separate cards of the vital and civil acts of every individual entered in the register (i.e. dates of baptism, burial, marriage). In this way individual family units can be reconstituted and in this form the data can yield valuable information concerning average age

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15 For a full discussion of these techniques see E.A.Wrigley editor: "An Introduction to English Historical Demography." pp 44-96. (1966).

at marriage of males and females, intervals between births, age specific fertility and mortality etc. Thus causal explanation of a demographic nature of secular fluctuations in the curves of baptisms, marriages and burials can be provided. The success of this method, however, rests heavily on the accuracy of the original registers, it being particularly important that 'leakage' in the form of out-migration, and under-registration is kept to a minimum. A fairly low percentage of omissions regarding baptisms for example, can give a highly distorted picture of fertility levels among reconstituted families. Consequently registers utilized for this method need to be of a far higher quality than those used for aggregate analysis. It is not surprising, in view of the quality of French parish registers, that the technique of family reconstitution was pioneered in France, and that the overwhelming majority of completed studies are French.

By comparison aggregate analysis is a superficial method whose only advantage is that it can yield useful information on past population trends with inestimably less effort. In its most comprehensive form aggregation involves not merely a counting of annual numbers of baptisms, marriages and burials, but a classification of these acts according to the month they took place, legitimacy, sex, place of origin of marriage partners, re-marriage etc. The method adopted here amounts to no more than a yearly aggregation of baptisms, burials and in some cases marriages, in parishes where the continuity and magnitude of registration makes analysis worthwhile. The procedure is straightforward except for the change of calendar in England in 1752, and in France in 1793 and 1806. In England, the adoption of the New Style Calendar in 1752 is accommodated by aggregating acts between 25 March 1752 and 31 December, to those between 1 January and 24 March 1753, as the year 1752. The year 1753

then begins on what was formerly 1 January 1752, which means that acts for the period 1 January to 24 March are aggregated twice.[16] The same procedure is used in connection with the adoption of the Revolutionary Calendar in 1793, and its abandonment in 1806.[17]

Although aggregate analysis has been widely employed as a rapid and fairly simple means of acquiring information of 17th and 18th century population trends, it is in no sense a sharp analytical tool and can go only part way to explaining why, and by what processes change took place.

(3.5) Population Changes in Beaujolais and Lancashire: without any reliable population totals for 18th century England and France, and in the absence of vital registration for most of the period, population change must be inferred from parish register data. The problems presented by these data have already been discussed, and though considerable, such data can, nevertheless, yield valuable information on pre-censal population trends which is unobtainable from any other source. The registers of Beaujolais (1737-92) are sufficiently accurate to justify simple quantitative analysis: the Lancashire registers are generally less reliable, and consequently their treatment is less rigorous and penetrating.

(1) The Data: nine parishes in Beaujolais were chosen for analysis, their choice being dependent on the accuracy and continuity of the registration of baptisms and burials, the average number of such acts each year (usually a minimum of 25), and the relative location of the parishes. With a view to comparing demographic conditions in the Massif with those on the Côte and the Saône Plain, six parishes were chosen from Haut Beaujolais, and three from Bas Beaujolais. The

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16 The Old Style Calendar had a year that ran from 25-24 March.

17 The Revolutionary Calendar had a year that began at the autumn equinox.

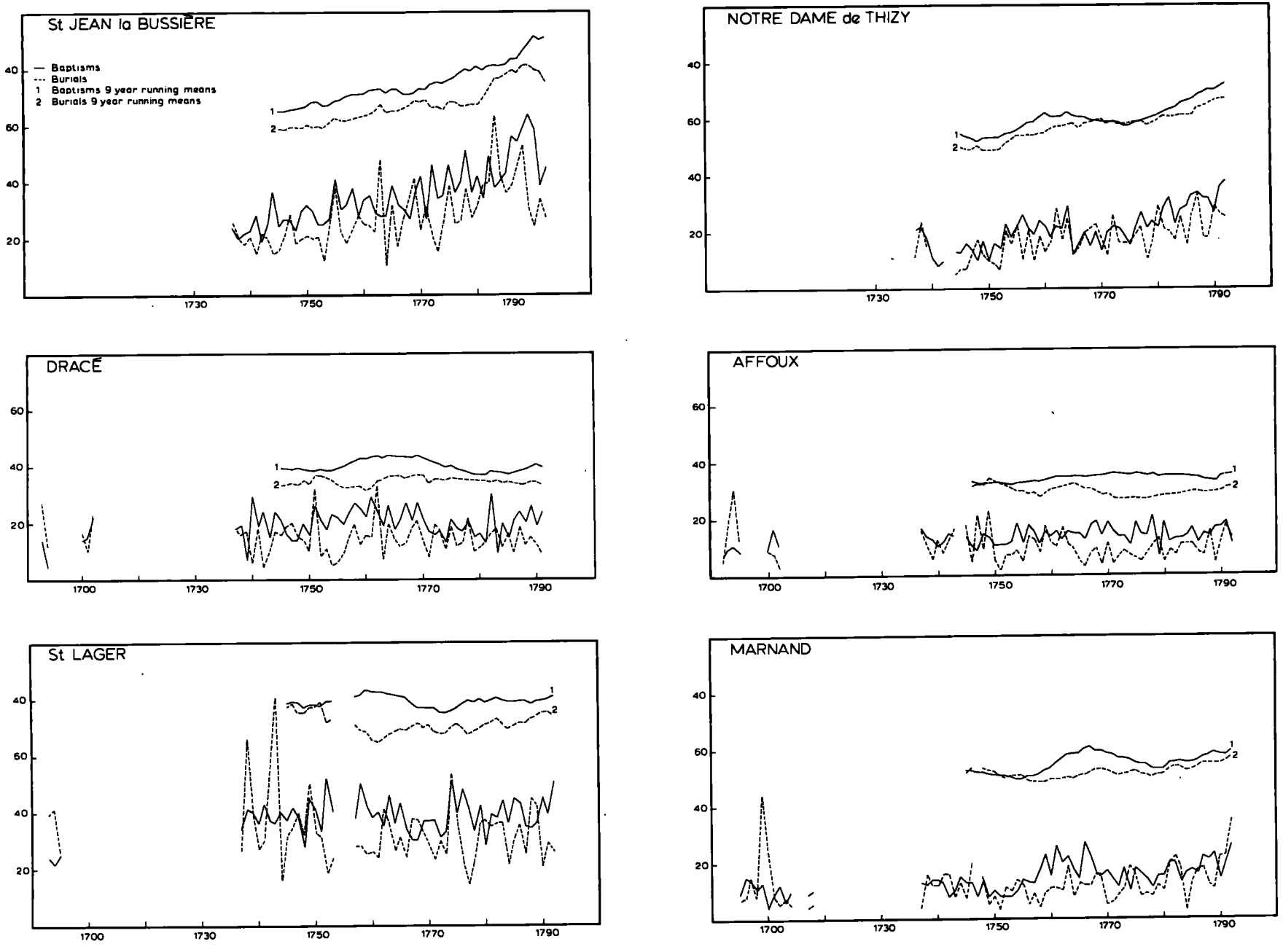
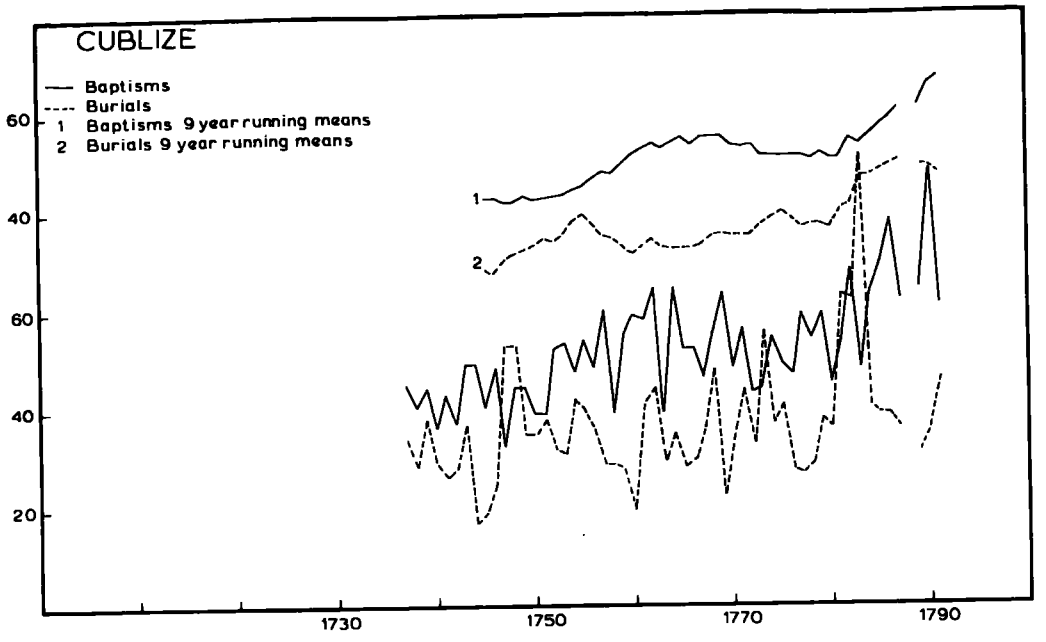
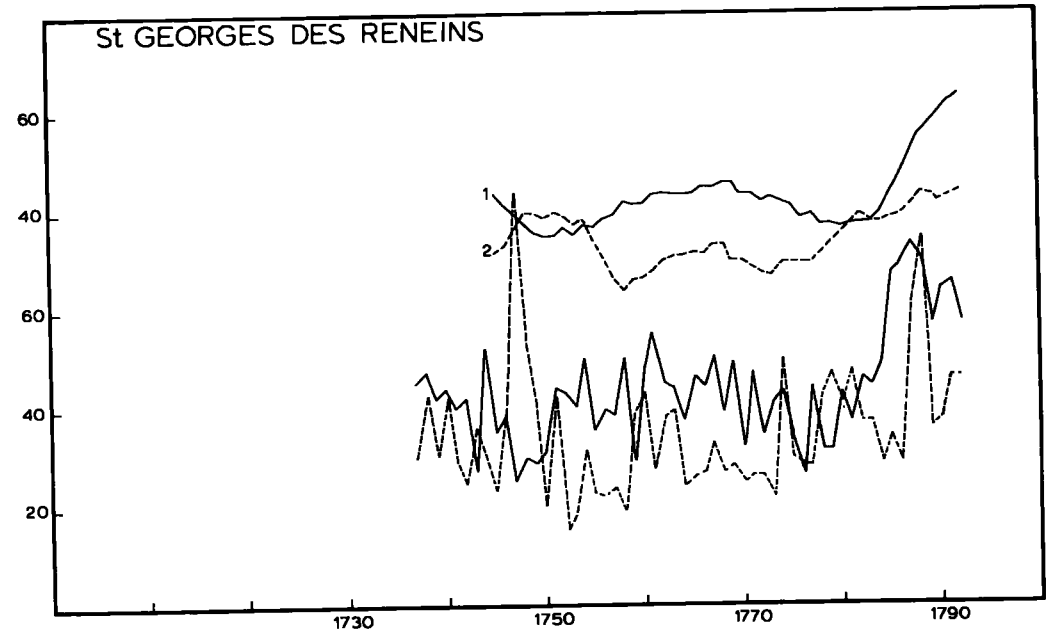

St JEAN la BUSSIÈRE
— Baptisms
--- Burials
1 Baptisms 9 year running means
2 Burials 9 year running means
NOTRE DAME de THIZY
DRACÉ
AFFOUX
St LAGER
MARNAND
1700
1730
1750
1770
1790

Fig. 3.1


CUBLIZE
Baptisms
Burials
1 Baptisms 9 year running means
2 Burials 9 year running means
60
40
60
40
20
1
2
1730
1750
1770
1790


St GEORGES DES RENEINS
60
40
60
40
20
1
2
1730
1750
1770
1790

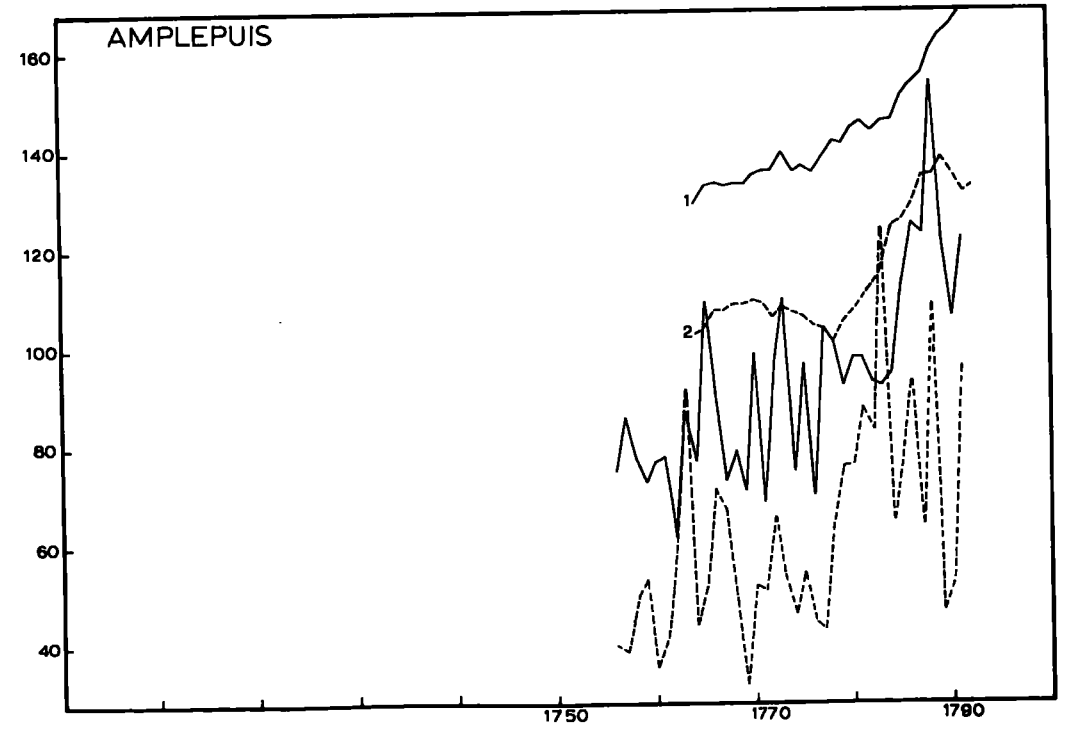

AMPLEPUIS
160
140
120
100
80
60
40
1
2
1750
1770
1790

Figure 3.2

six parishes of the Massif were: Affoux, Amplepuis, Cublize, Marnand, St Jean la Bussière and Thizy. Except for Affoux each parish depended to a considerable degree on the domestic textile industry in the pre-censal period. The parishes of the lowlands were: St Lager, located on the Côte and specializing in viticulture; Dracé, situated on the rich alluvial plain of the River Saône; and St Georges-des-Reneins, also sited on the flood plain of the Saone and involved in arable farming. However, the parish showed greater economic diversification than Dracé, being important in the organization of the Beaujolais wine trade as well as being located on the main Marseille-Lyon-Paris routeway via the Bourgogne.

We have already discussed the defects of English parish registers compared to those in France. In Lancashire, the registers of those parishes that underwent early industrialization are known to be highly defective in the last quarter of the 18th century. Considerable under-registration has resulted from the strength of nonconformist groups and widespread in-migration. However, even in the early 18th century certain registers reveal substantial omissions, particularly on the burial side. Thus, any analysis dealing with absolute numbers (as is possible with the Beaujolais data) is on dangerous ground, and any attempt to reconstruct past demographic patterns must rely on the broad trends illustrated by the curves of baptism and burial.

Data for ten parishes were collected and processed using aggregate techniques (figures 3.4 and 3.5). In chronology the data range from 1650 to 1820, but in most instances cover the greater part of the 18th century. The parishes chosen include the three major chapelries of the study area: Haslingden and Newchurch-in-Rossendale, belonging to the parish of Whalley, and Over Darwen in the parish of Blackburn. The Haslingden data were obtained from the original

registers, preserved in what is today, the parish church. The Newchurch data were obtained from two sources: the Bishop's Transcripts for the period 1723-1799, and the published volume of the registers for the period 1653-1722.[18] The material relating to Over Darwen was abstracted from the parish registers for the period 1780-1820. Registers for the period prior to 1780 are not available and thus extensive use has been made of the Bishop's Transcripts for the parish of Blackburn, in which Darwen entries were made. Because of the relatively small number of entries relating to Over Darwen per se, baptismal data for the whole of the Darwen Valley (which includes the smaller chapelries of Lower Darwen, Eccleshill, Yate and Pickup Bank and Tockholes) were aggregated (fig.3.4). Burial data were so patchy that they have not been considered, while frequent gaps in baptismal data have been partly filled by inserting baptismal data from the Independent Chapel of Over Darwen.

Nonconformism was established at an early date and on a large scale in the Rossendale area.[19] As such, perhaps less can be said about absolute numerical changes in population in this part of Lancashire than in other areas during this period.

The three chapelries of the study area fell within the orbit of the domestic textile industry in the pre-censal period. The other parishes chosen it was hoped would give a cross-section of communities involved both in industry and agriculture. Great Harwood

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18 "The Parish Registers of Newchurch-in-Rossendale 1653-1722." Lancs. Parish Regr.Soc. no.45 1912.

19 There were several nonconformist sects of some strength in 18th century Rossendale. In terms of under-registration, the most significant were the Baptists who did not believe in baptism of infants. There was a Baptist Meeting House at Bacup as early as 1692. There were Baptist chapels at Cloughfold (1675) and Goodshaw (1747). The Quakers were represented at an early date with private burial grounds at Chapel Hill (1671) and Yate Bank. There were Presbyterian Meeting Houses at Haslingden (1689) and Over Darwen (1714) while every Methodist denomination was represented in the area. see "Victoria County History of Lancashire." VI 1911 pp 275-280 and pp 433-441.

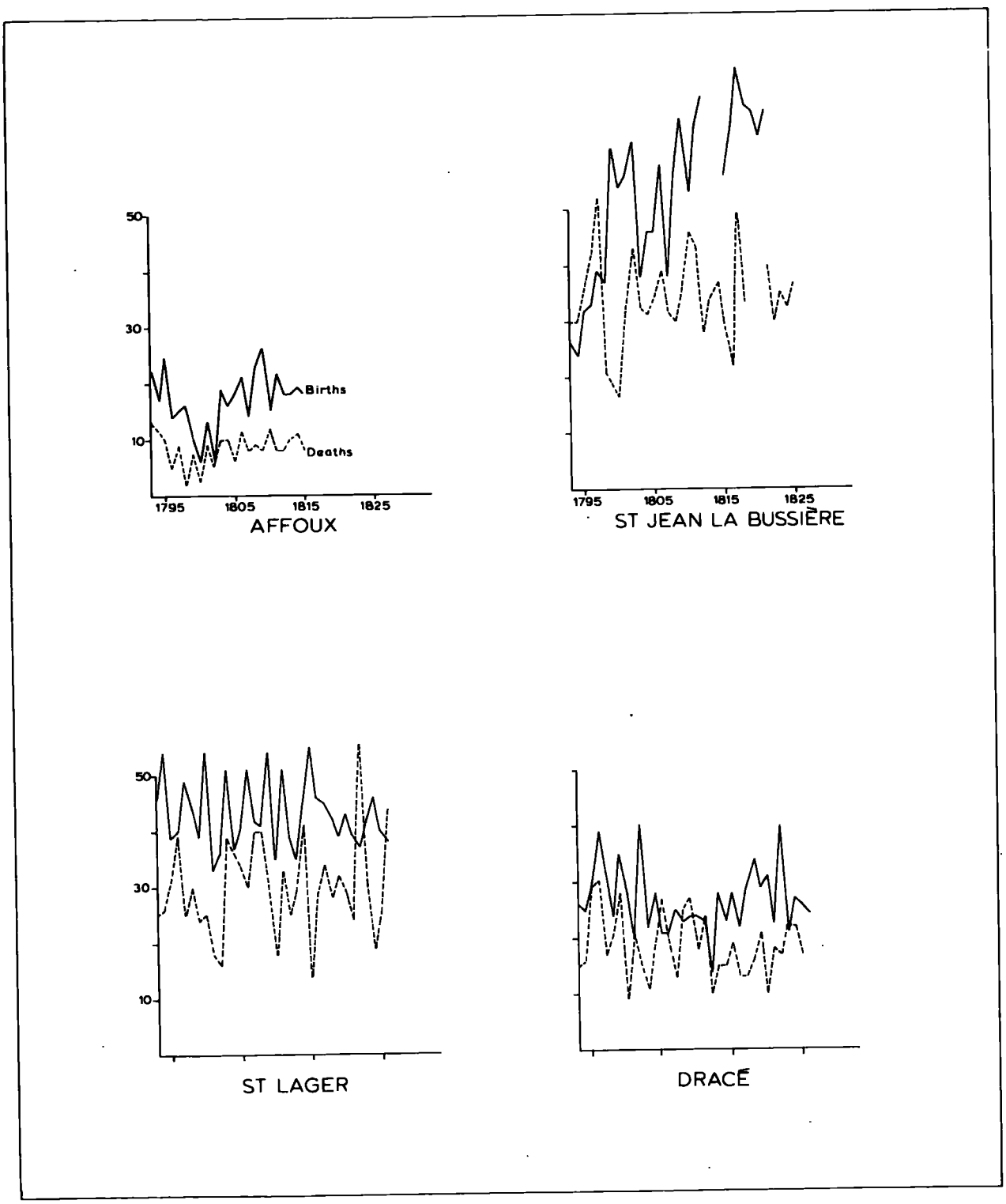
50
30
10
Births
Deaths
1795
1805
1815
1825
AFFOUX
1795
1805
1815
1825
ST JEAN LA BUSSIÈRE
50
30
10
ST LAGER
DRACÉ

Fig. 3.3

belongs to the same economic system as the Rossendale chapelries, while Downham, Brindle, Bolton-by-Bowland and Waddington had both industrial and agricultural interests (figure 2.1b). Halsall and Warton were predominantly agrarian in character. We have therefore three main economic types of parish: (1) parishes where rural industry (i.e. domestic textile industry) was the major, full-time economic pursuit (2) parishes where there appears to have been some degree of balance between agriculture and industry, and (3) parishes which were purely agrarian.

(i) Natural Increase: in each of the parishes of Beaujolais considered in this study there was a clear movement towards population growth in the period 1737 to 1792, with baptisms consistently outnumbering burials. Assuming a 'closed' population without any net migrational change, growth was of the order of 50 percent. The decennial growth of population, derived from the aggregation of data in eight of the nine parishes[20] is given in table 3.1 below.

Table 3.1 Population Change 1740-1790.

	1740	1750	1760	1770	1780	1790
Estimated Popn	5300	5529	6298	6971	7537	8090
Percent Change	100	104	119	132	142	153

The above totals were calculated after a method devised by Henry.[21] He assumed a constant crude birth-rate of 40 per 1000 under the Ancien Regime, and by aggregating the total number of baptisms at ten year intervals was able to compute the total population at the end of each decade. The method can be criticised on two points: first the assumption that the crude birth-rate was 40 per 1000, and second that this figure was invariable for most of the 18th century. At Crulai for example, Gautier and Henry[22] estimated the crude birth-rate

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20 Parish register data for Amplepuis is not available until 1760.

21 L.Henry: "Quelques données sur la région autour de Paris au XVIII^e siècle." Population 1962 p 306.

22 E.Gautier and L.Henry: "La Population de Crulai." I.N.E.D. 1958 p226

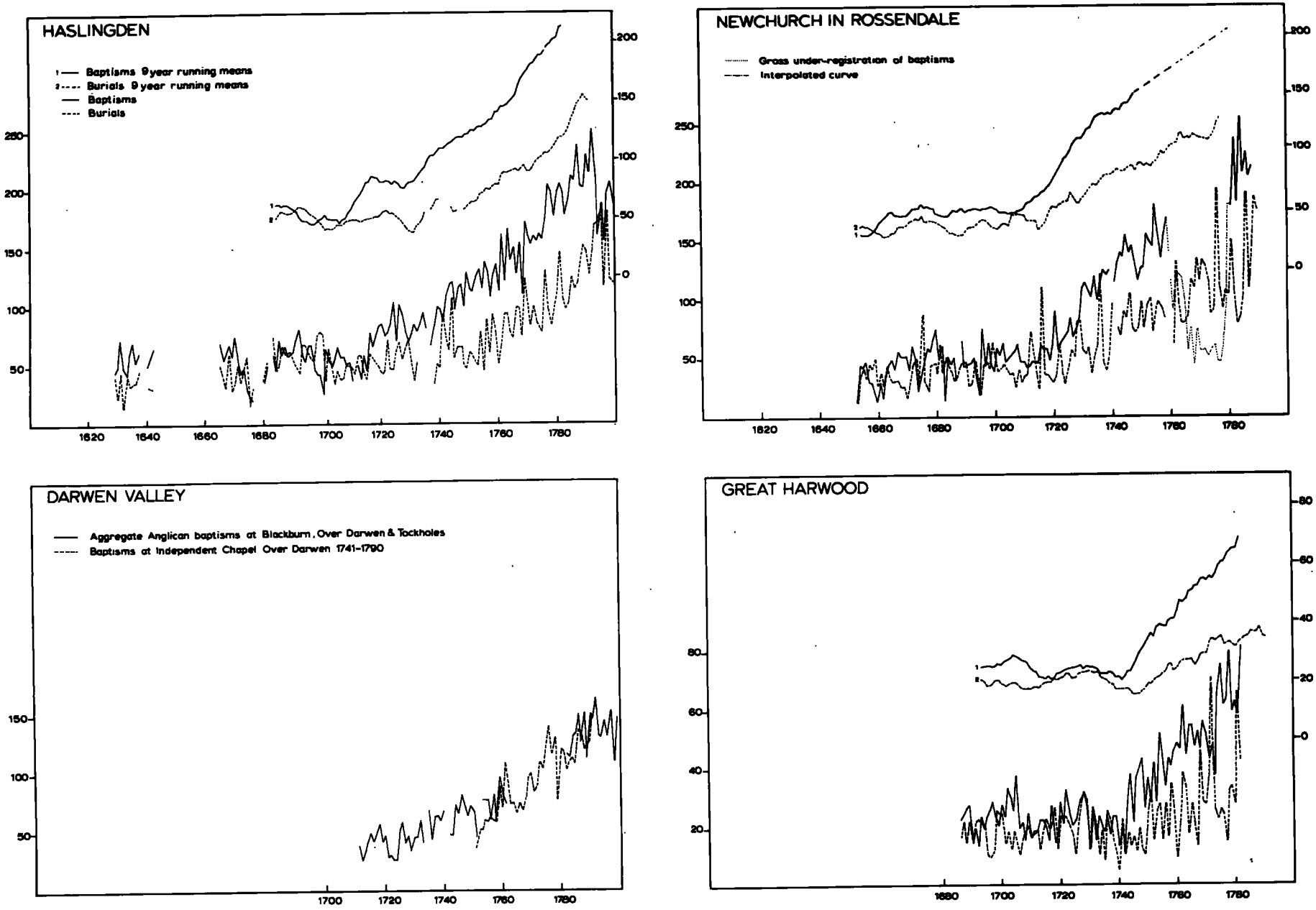
HASLINGDEN
1 — Baptisms 9 year running means
2 ---- Burials 9 year running means
— Baptisms
---- Burials
NEWCHURCH IN ROSSENDALE
Gross under-registration of baptisms
Interpolated curve
DARWEN VALLEY
— Aggregate Anglican baptisms at Blackburn, Over Darwen & Tockholes
---- Baptisms at Independent Chapel Over Darwen 1741-1790
GREAT HARWOOD

Fig. 3.4

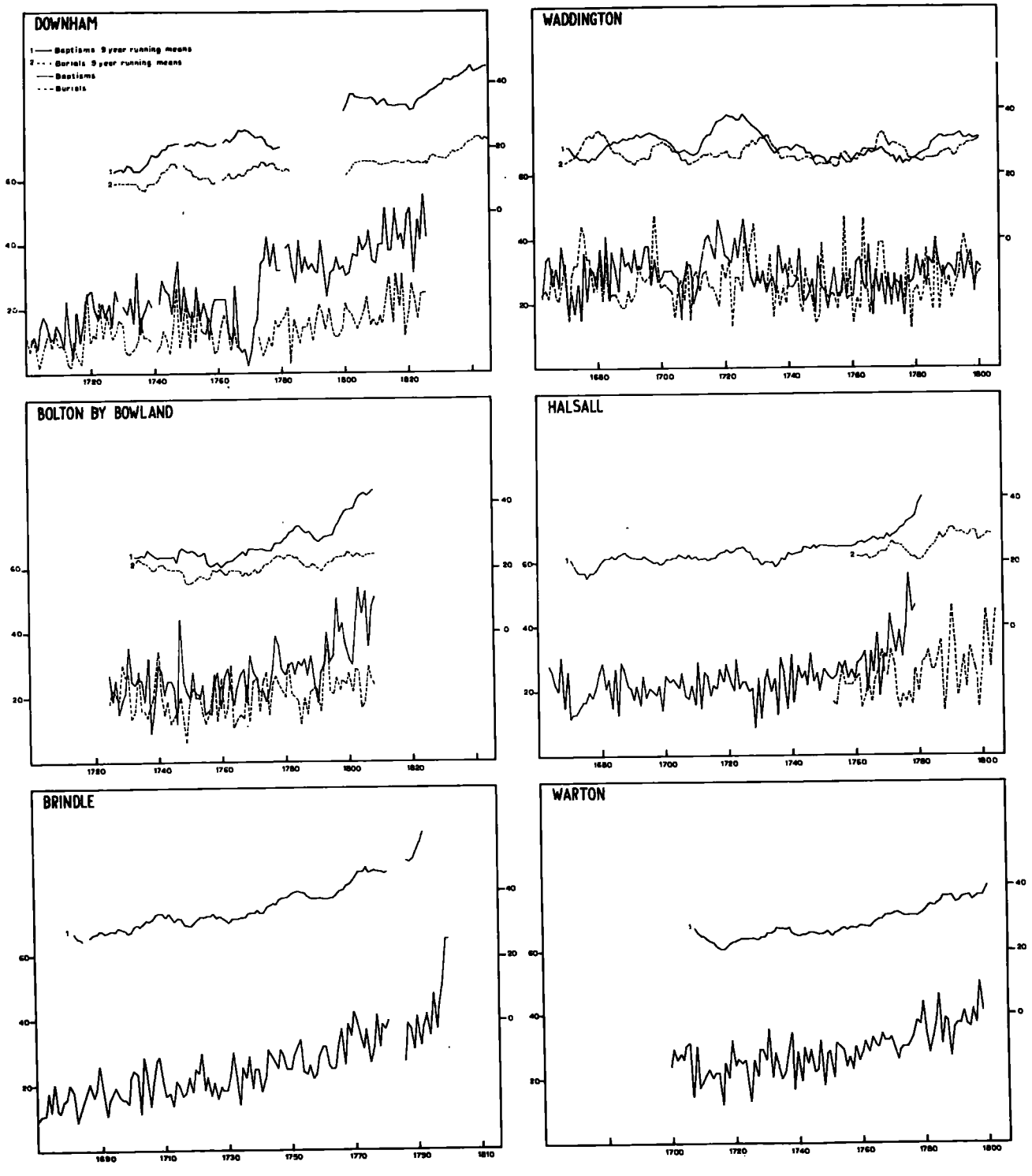
DOWNHAM
1 —— Baptisms 9 year running means
2 - - - Burials 9 year running means
—— Baptisms
- - - Burials
WADDINGTON
BOLTON BY BOWLAND
HALSALL
BRINDLE
WARTON

Fig. 3.5

at 36 for the period 1675-1750; and Valmary estimated a figure of 32 (which is rather low) for the town of Thezels in the Massif Central in 1766.[23] Yet, despite these and other regional variations in vital rates, there is strong evidence to suggest that on average the crude birth-rate fluctuated around 40 per 1000 in rural areas under the Ancien Regime. Moreover, this figure only began to show significant change with the general decline of fertility in the last decade of the 18th century. It also seems likely that the crude birth-rate in 18th century Beaujolais approached this figure. Unfortunately, calculation of birth-rates for individual parishes is hindered in most cases by the widespread effects of out-migration. However, at St Jean-la-Bussière the continuous rise in the annual number of baptisms during the period suggests that such losses, if they took place, were of small magnitude. An attempt to calculate the crude birth-rate of this parish therefore has some significance. The natural increase of population in the parish 1737-1801 was 469. Thus, given a total population of 1122 at the first official census of 1801, the total population in 1737 (discounting the migrational factor) would have been 653. As the average number of baptisms in the the period 1737-40 was 25 per annum, a crude birth rate of around 40 per 1000 appears to have been a possibility in 1740. Using the same method, the crude death-rate for 1737-40 was estimated at 30.2 per 1000. By 1801 the crude birth-rate had fallen to 35.7, and the death-rate to 27.5. Henry's assessment of a crude birth-rate of around 40 per 1000 for the Ancien Régime would appear to have some relevance in the context of Beaujolais until the 1790's, when there was a dramatic decline in fertility throughout France. Henry also estimated population increases in the rural areas surrounding

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23 Quoted in Guillaume and Poussou op.cit. p 136.

Paris, assuming net migration change was zero, at 38 percent for the 18th century. In Beaujolais the increase was more than 50 percent, which may represent either a lower rate of net migrational loss compared to areas in proximity to the national capital, or else a fundamental difference in vital rates related to economic factors. Both possibilities will be discussed in later sections.

Comparison of natural increase in Beaujolais with that in Lancashire is seriously hampered by the inadequacies of Lancashire parish register data. Population growth in 18th century Lancashire exceeded that in Beaujolais, though it is impossible to estimate crude birth and death-rates and say if natural increase played a significant role in this differential. Lancashire's population during the 18th century grew faster than that of any other county in England and Wales and by 1801 only London had a higher density of population. Most of this growth occupied the last twenty years of the century and was associated with heavy in-migration and the incipient industrial revolution. This phase need not concern us here, and according to Dean and Cole[24] growth in the first half of the century is almost entirely attributable to natural increase. Whether this situation was mirrored in the rural-industrial parishes of East Lancashire is uncertain, and discussion on this point will be postponed until later. Figures 3.4 and 3.5 show that baptisms generally exceeded burials by several points for most of the 18th century, though it must be emphasised that there may be slight exaggeration of this differential owing to a greater under-registration of burials. On the other hand, the curves for Waddington indicate a considerable under-registration of baptisms. Nonetheless, the 18th century was a period of vigorous natural increase in Lancashire

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24 Dean and Cole op.cit. p 113.

though rates of population growth were by no means evenly distributed throughout the county. Before considering geographic differences in rates of population growth both in Lancashire and Beaujolais, it is important to consider a number of demographic trends and patterns unique to each region.

(ii) Demographic Crises in Beaujolais: with a more or less constant crude birth-rate for the 18th century secular fluctuations in population growth are largely a function of the incidence of demographic crises:- years of economic crisis when the number of deaths substantially exceeded the number of births, producing a real decline in the total population. In Beaujolais, the decades of most severe crisis were the 1740's and 1780's. This was equally so at Crulai and in the rural areas of the Paris region: in both areas in the 1740's the total population suffered a decline owing to the severity of natural decrease. In the parish of Sainghin-en-Melantoise in Pas de Calais, burials exceeded baptisms four times in the 40's, twice in the 60's and in the 70's, and three times in the 90's. The overall trend in Beaujolais was for a small increase in births in the 40's, followed by a steep rise in the 50's and 60's, a decline in the 70's and a recovery in the 80's. This trend is apparent in all parishes in spite of the effect of migration. However, virtually every year witnessed a demographic crisis in at least one parish.

Table 3.2 Incidence of Demographic Crises 1740-89.[25]

	1740-49	1750-59	1760-69	1770-79	1780-89
No.of crises	18	8	12	16	18
Crises affecting two or more parishes.	5	1	4	5	6

None of these crises, however, was as severe as those of 1693-94 and 1708-09. (figures 3.1 and 3.2). In 1782 the cure of Mardore wrote:

"Il est vrai que cette paroisse avait été cruellment decimée

25 The data are derived from the nine parishes previously mentioned with the exception of Amplepuis.

en 1694 et en 1709...Mardore perdit en moins d'un quart siècle le tiers de sa population."[26]

In 1693 the price of grain rose disastrously, and in Beaujolais, as throughout Western Europe, many died of starvation. The terrible winter of 1708-1709 destroyed the grain, fruit and wine harvests in the region with equally disastrous consequences.[27]

Periods of demographic crisis in the 18th century are associated with periods of economic difficulty which in a subsistence orientated economy mean harvest failure and unusually high grain prices. Such crises produce brief, but abnormally high mortality accompanied by a fall in marriage rates and a concomitant drop in fertility. Communities such as those in Rossendale and Haut Beaujolais, that were dependent on rural industry, were by no means in a favoured position at such times; trade fell away rapidly, and being more fully absorbed into a money economy the price of grain was even more significant than to subsistence orientated communities. If population growth was faster among rural-industrial rather than among agricultural groups then this situation cannot be attributed to any cushioning from the effects of poor harvests.

(iii) Migration in Beaujolais: the parish registers of Beaujolais permit discussion of the importance of migration in the pre-censal period that is not possible for Lancashire. Analysis can be taken a stage further than that in section 3.5(i) by comparing natural increase with actual numbers of baptisms. The first reflects population growth in a hypothetical situation of no net migrational change. The second is an indicator of real population totals (assuming a constant birth-rate) as a result of the interaction of fertility, mortality and migration. The decade 1740-49 is taken as base 100

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26 De la Rochette op.cit. pp 198-199.

27 ibid.

and the crude birth-rate is assumed constant at 40 per 1000. The results are shown in table 3.3.

Table 3.3 Population Change: from Natural Increase and Baptisms.

	1740-49	1750-59	1760-69	1770-79	1780-89
Nat.Increase	100	115	129	140	151
Baptisms	100	115	124	117	138

Clearly the numbers of decennial baptisms increases far less than we would expect given the above rates of natural increase. This situation can be explained in one of two hypotheses: (a) either there was a substantial decline in fertility in Beaujolais during the 18th century, or (b) there was considerable out-migration which became particularly apparent after 1760. The first hypothesis runs counter to all previous work on the historical demography of 18th century France, and for this reason seems unlikely. On the other hand Henry[28] discovered a similar discrepancy in the Paris region and thought the hypothesis most likely to explain the slower growth of baptisms in relation to natural increase was emigration of the rural population to Paris. This would seem plausible in a region which fell within the hinterland of Paris and which for centuries had been a source of immigrants for the capital. The situation in Beaujolais is not dissimilar: the region lay within the sphere of influence of Lyon which at the time was the second city of France and an important commercial and industrial centre. Its total population in 1760 was around 60,000: by 1789 this figure had increased to 90,000.[29] At a time when urban mortality was so high that towns and cities could barely replace their numbers through natural increase, growth of this magnitude could only have been accomplished through heavy in-migration. Table 3.3 suggests that out-migration from Beaujolais was particularly heavy after 1770, this coinciding

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28 Henry 1962 op.cit.

29 A.Landry: "la Révolution Démographique." 1934 p 196.

with the spectacular growth of Lyon. Chatelain[29] has shown that Lyon attracted large numbers of migrants from the surrounding mountainous regions of the Massif Central, the Alps and the Jura in the second half of the 18th century.

(iv) The Chronology of Population Change in Lancashire: whereas there was general uniformity in the parishes of Beaujolais in the chronology of population growth, this was not the case in Lancashire. The variable chronology of population change poses some interesting problems (especially in the rural-industrial parishes) which will be discussed in this section.

We have already mentioned that a constant birth-rate throughout the 18th century is not applicable to England. For example, Dean and Cole[30] estimate the crude birth-rate for Lancashire in the second half of the 18th century at 39.7 compared to 33.6 for the first half of the century. Secular variations in the numbers of baptisms cannot be explained solely in terms of changes in the total population. Fertility played a significant role, albeit one that is difficult to define.

In the agricultural parishes of Warton and Halsall the annual number of baptisms remained more or less invariable until the 1770's. Burial data appear to have been highly inaccurate in both parishes, and except for the period 1760-1800, when at Halsall registration of burials appears fairly reliable, burial data have been neglected. However, if we assume the level of births to have been several points above those of deaths and positive natural increase the norm, then it is likely that these parishes suffered a continuous net migrational loss of excess population for most of the century. This process maintained a static population at Halsall

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29 A.Chatelain op.cit. p 92.

30 Dean and Cole op.cit. p 129.

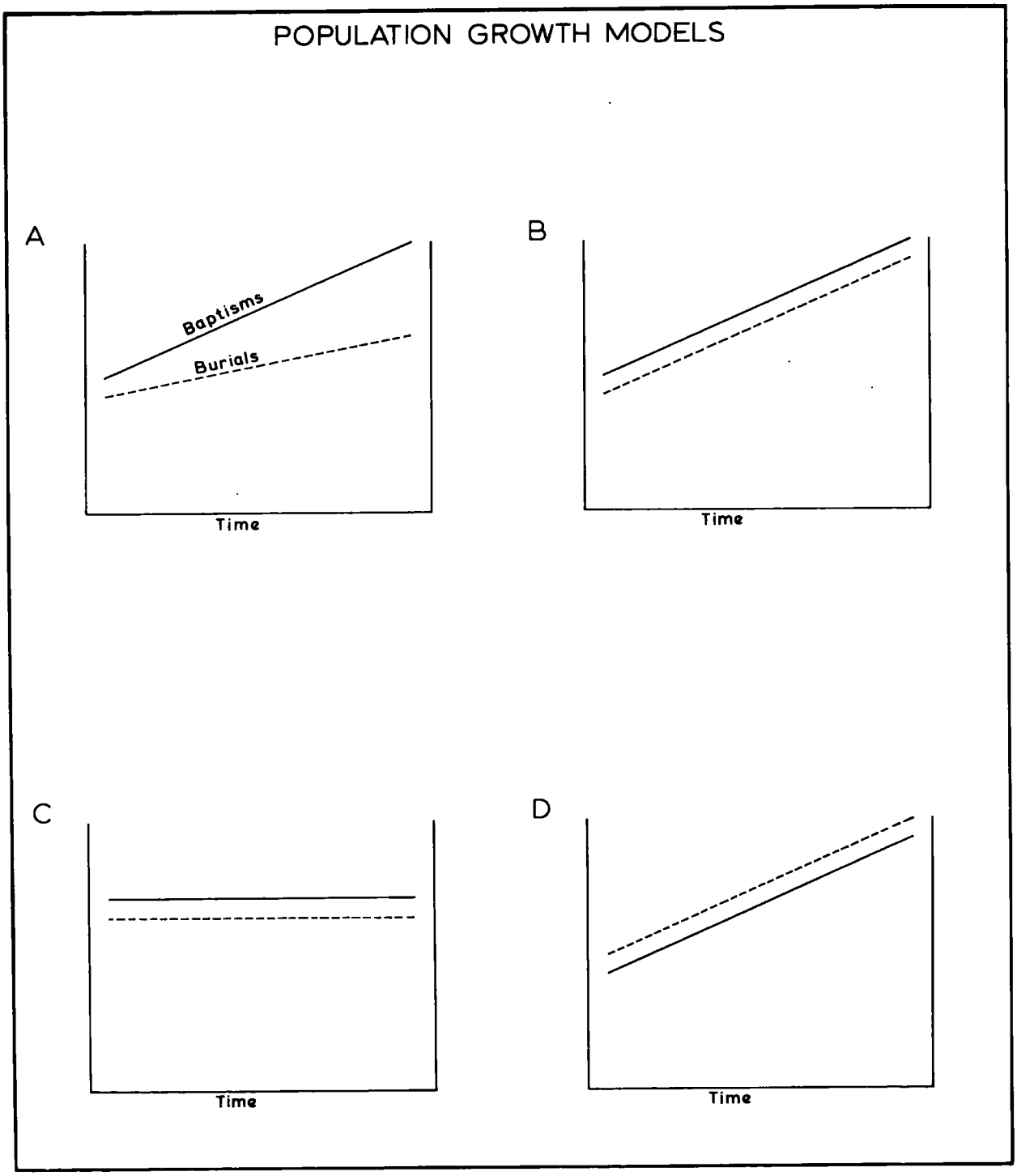
POPULATION GROWTH MODELS
A
Baptisms
Burials
Time
B
Time
C
Time
D
Time

Fig. 3.6

and a slowly rising population at Warton, though in the latter parish the rate of growth was far below one would normally expect, given prevailing rates of natural increase.

A second group of parishes are those occupied in varying degrees in both industry and agriculture (i.e. Bolton-by-Bowland, Downham and Brindle). In demographic terms these parishes accord to model A (figure 3.6), showing in the course of the century a steady increase in the annual numbers of baptisms. This regular and continuous growth probably reflects a steadily rising population. Burial data at Brindle are highly defective, but at Bolton and Downham there appears to have been fairly accurate registration. In both parishes the curve of burials is substantially below that of baptisms, suggesting vigorous natural increase, a part of which was translated into population growth. However, at Downham, the discrepancy between the curves is such as to imply either some under-registration of burials or else net migrational loss which retarded population growth.

The third group of parishes comprises Haslingden, Darwen, Newchurch-in-Rossendale and Great Harwood - parishes where the domestic textile industry dominated the economy and which can accurately be termed 'rural-industrial'. The pattern and chronology of demographic change in this group of parishes was quite different from that in the two previous groups considered. At Haslingden, Newchurch and Great Harwood there is marked discontinuity in the curves of population growth in the early part of the 18th century (figure 3.4). Until 1720 at Haslingden and Newchurch, and 1740 at Great Harwood, the level of baptisms and burials was approximately the same, with only a small natural increase and therefore little or no growth of population. However, around these two dates there occurred a remarkable upswing in the curve of baptisms: in the space of five or six years baptisms were running 10 to 15 points higher per

annum. There followed continuous and cumulative increases in the annual numbers of baptisms for the remainder of the century. What was the cause of this sudden change in the trend of population growth, and how is it meaningful in the context of 18th century population change in the region? These questions will be examined under three possible hypotheses:

(1) Increase in Fertility: this would most likely be linked with favourable economic conditions. There would be an increase in the average number of children relative to the number of fertile women. The demographic causes might be earlier marriage, an increase in the frequency of marriage or else a desire to have more children.

(2) Increase in the Birth-Rate: if unusually high fertility (or low infant mortality) had occurred twenty or thirty years before, this would have produced an abnormally large birth-cohort which in the period 1720-1740 occupied the reproductive age-groups. Given constant fertility this would result in an increase in the number of births, which expressed as a function of the total population would produce a steep rise in the crude birth-rate.

(3) In-Migration: a sudden influx of migrants into the rural-industrial parishes would increase the total population, and as a corollary, the annual number of births.

The least likely hypothesis is the second: at Newchurch registration goes back to 1653; at Haslingden and Great Harwood to 1681 and 1685 respectively. There is nothing in the curves of baptisms and burials in these parishes in the latter part of the 17th century to suggest either that fertility increased or mortality fell in such a way as to produce an abnormally large birth-cohort.

Any increase in population, and the retention of that population on a constant area, implies a continuous expansion of the local economy and a demand for labour sufficient to absorb the

surplus population. The sudden and unexpected upswing of baptisms in the rural-industrial parishes is almost certainly linked with economic factors peculiar to the region of the domestic textile industry. This being so, in-migration into an area of comparatively high employment potential seems a plausible hypothesis though there are problems. First of all a fairly stringent application of the Act of Settlement considerably hindered the free movement of population between parishes and townships. The Quarter Sessions of the period contain numerous instances of families being deported and returned to their townships of origin. The issue of settlement certificates was introduced in 1697 though they were of little benefit to poor labourers, settlement only being granted if they rented a £10 tenement or held a parish office.[31] Any movement into Rossendale had to be on a fairly large scale to produce the necessary impact on baptisms indicated in the records. In addition, such a movement would have had to have taken place over a relatively short time span. Given these problems, the hypothesis of extensive in-migration into rural-industrial parishes such as Newchurch-in-Rossendale and Great Harwood, is less attractive.

This leaves discussion of the role of fertility. If fertility was the major factor responsible for the sharp increase in baptisms then it must be assumed that favourable economic conditions prevailed at the time. Such conditions might be no more than the economic advantage of large families in a system where children could be set to work at simple tasks at a very early age. Under the domestic textile system children of the age of four or five were no longer an economic burden, which was not the case in agricultural and other economic systems of the time. Definitive

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31 W.E.Tate: "The Parish Chest." pp 197-98.

answers to questions of family size and fertility can, of course, only be provided through full-scale family reconstitution which is beyond the scope of this work. However, previous studies of groups engaged in rural industry have suggested that fertility among such groups was significantly higher than among their agrarian counterparts. Deprez has shown marked regional differences in rates of rural population growth in 18th century Flanders:[32] areas of earliest and fastest growth were the infertile, sandy regions such as the Chatellenie du Vieuxbourg, where the linen industry was the staple of the local economy. In England J.D.Chambers has shown that there were important demographic differences between agricultural and industrial villages in 18th century Nottinghamshire.[33] Population growth was faster in the industrial villages as a result of higher fertility, earlier marriage and some in-migration from agricultural areas. Finally, S.Daveau has produced evidence from a small community of clock-makers in the Haut Jura which shows the population to have increased fourfold in the period 1657 to 1790.[34] This startling growth he attributes to comparatively high fertility which was not compensated by the normal out-migration, typical of upland, agriculturally orientated communities.

Thus it seems not unreasonable to suggest that the principal mechanism of faster and earlier growth of population among groups engaged in rural industry in East Lancashire, was possibly higher fertility. Employment opportunities were available in this region which were lacking elsewhere and such a situation might have proved a positive stimulus to fertility. The magnitude of population growth appears to have been roughly proportional to the degree of involvement

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32 P.Deprez: "The Demographic Development of Flanders in the 18th Century." reprinted Eversley and Glass eds. op.cit. pp 608-630.

33 Chambers op.cit. 1951.

34 S.Daveau: "Une Communauté Jurassienne au 18 siècle - les Foncine." Rev.de Geogr.de Lyon 29 1954 pp 117-129.

in industry and in parishes where dual occupations were most common (e.g. Downham, Brindle, Bolton-by-Bowland) demographic trends were transitional between those of purely agricultural and those of predominantly industrial parishes.

Analysis of the curves of baptisms for the industrial parishes can be carried a stage further by introducing the best-fit mathematical curve to the time-trend data. If population growth were a simple function of natural increase (i.e. zero net migrational change) then the total annual number of baptisms ought to show an exponential increase and the long term trend fit the logistic curve. Both logistic and log.^{2} curves were fitted, the closeness of fit being calculated by the product moment correlation coefficient (R).

Table 3.4 Baptisms: R Values.

	Log.	Log^2.
Haslingden	.9939	.9704
Newchurch	.9794	.9913
Great Harwood	.9754	.9935

Table 3.4 shows the log.^{2} curve to have been a better fit in two of the three parishes, suggesting that the rate of population growth was faster than what we might have expected if growth were simply related to natural increase. Natural increase may well have been supplemented by in-migration in the parishes of Great Harwood and Newchurch-in-Rossendale. This being so the possibility of a slight leakage from the Haslingden registers in the course of the 18th century cannot be discounted. At the same time the effect of the general increase in fertility that is known to have taken place in England after 1750, might have produced a situation where rates of population growth accelerated beyond the previous rates of natural increase to give a curve which correlates most closely with that of logarithmic^2.

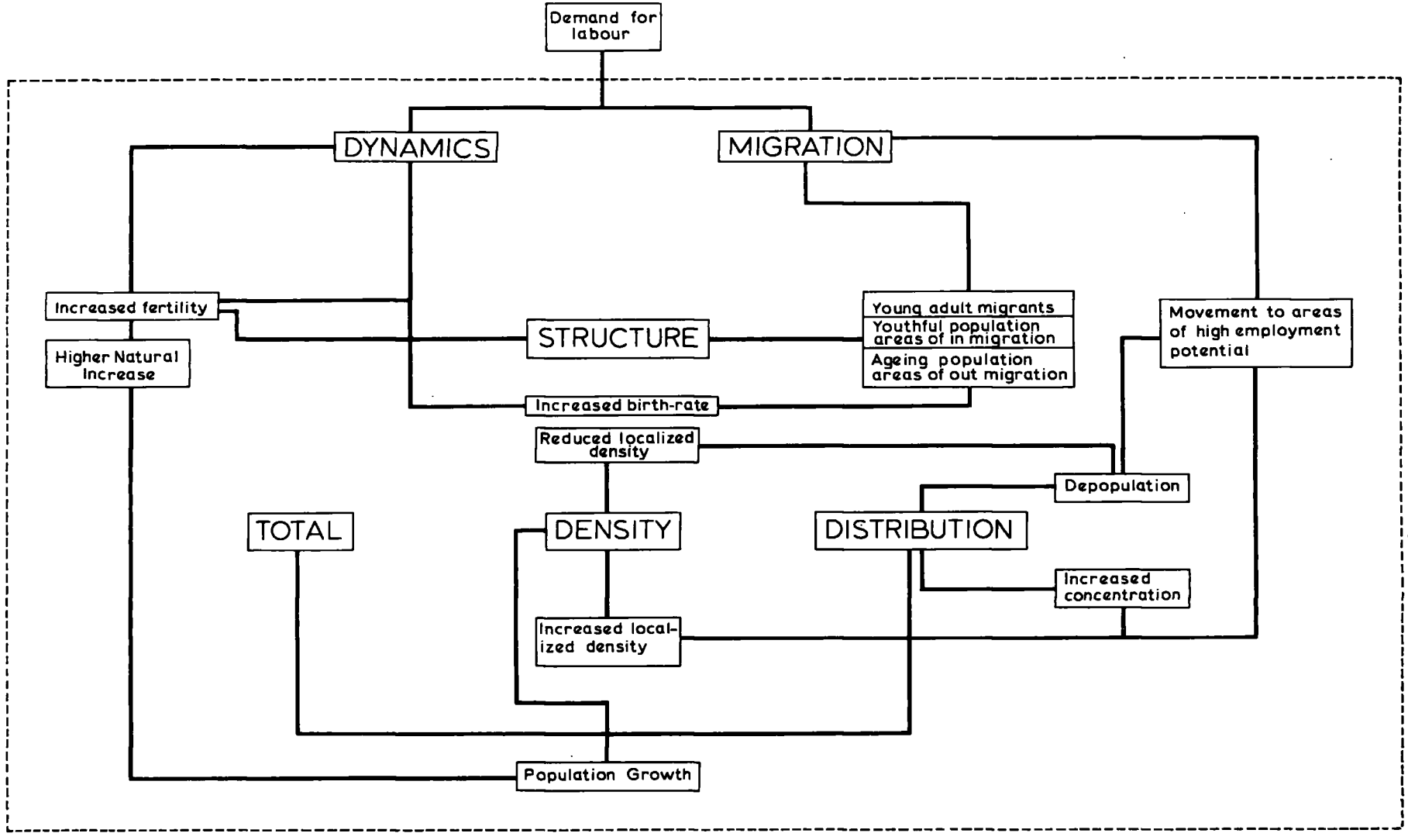

Fig. 3.7 The Demographic System

(v) Differential Population Growth: Beaujolais and Lancashire: any time trend of births or baptisms is a reflection of two main variables: the total population (more accurately the total number of married women in the reproductive age groups) and the level of fertility of any community. Other things being equal, the larger the population the more children produced with any decrease in the population resulting in a corresponding decrease in the number of births. The same effect is produced if for example the average number of children born to each woman increases (or decreases) from say 2.5 to 3.0, only this time the number of married, fertile women would remain constant. In Beaujolais, the time trend of baptisms as we have seen, is closely related to changes in total population: in Lancashire total population is probably the most significant variable though the importance of fertility changes must not be underestimated.

Having established that Beaujolais as a region probably suffered a net migrational loss of population after 1760 (section 3.5(iii)) it is necessary to enquire which parts of the province experienced greatest loss and to what factors any differentials that might appear are related. Table 3.5 shows population change in the three agricultural parishes selected from Bas Beaujolais.

Table 3.5 Population Change in Bas Beaujolais.

	1740-49	1750-59	1760-69	1770-79	1780-89
Nat.Increase	100	117	129	137	146
Baptisms	100	113	112	99	119

Population growth through natural increase was similar to that for the eight Beaujolais parishes as a whole (table 3.3). There was an increase of 46 percent in the period 1740-89 compared with 51 percent for Beaujolais in this period. The implication is that fertility levels were fairly uniform in the agricultural and industrial parishes. However, decennial levels of baptisms were considerably below those of natural increase in Bas Beaujolais, and

this discrepancy was substantially greater than that for Beaujolais as a whole. If one takes account of the effect of Bas Beaujolais on the data in table 3.3, then the distinction between Haut Beaujolais and Bas Beaujolais is exaggerated further.

On the basis of tables 3.3 and 3.5 it seems likely that out-migration occurred on a far larger scale from the parishes of Bas Beaujolais which specialized in arable farming and viticulture, compared to the more diversified economies of the parishes of Haut Beaujolais. Areas of intensive agriculture, such as the Saône Valley and the Côte (and even parts of Haut Beaujolais where extensive hill farming predominated e.g. Affoux) appear to have experienced little population growth throughout the 18th century. We have in these areas a demographic situation which closely conforms to model C (figure 3.6) where baptisms consistently run several points above burials without producing any noticeable increase in the mean annual numbers of baptisms over a prolonged period. The obvious conclusion, assuming the data to be fairly reliable, is that the populations of these areas remained stable as a consequence of a steady outward stream of migrants to areas of greater employment potential. (e.g. Lyon).

The demographic stagnation of agricultural parishes in Beaujolais is closely paralleled by the situation in the parishes of Halsall and Warton in Lancashire. In spite of the 18th century being aperiod of rising fertility in many parts of Britain, natural increase in these two parishes does not appear to have been translated into demographic expansion and growth. It seems most probable that here we see again the effects of the syphoning-off of surplus population in the form of out-migration to surrounding towns - in this case perhaps Liverpool and Preston.

Turning to parishes primarily engaged in rural industry, we

see a rather different picture. Parishes where the domestic textile industry was the staple of the economy (both in Haut Beaujolais and Rossendale) conform most closely to model A (figure 3.6), with positive natural increase being expressed in increasing numbers of baptisms, and presumably rising population. If out-migration took place it was on a small scale and cannot be accurately measured given the relative crudeness of the data and techniques of analysis.

In the absence of any census before 1801 both in England and France, what can we say about differential population growth in 18th century Lancashire and Beaujolais? Until 1780 it seems reasonable to assume the following: births running at a higher level than deaths almost everywhere and producing as a result, vigorous natural increase. Natural increase in Beaujolais in the half century from 1740 to 1789 appears to have been of the order of 50 percent. Though data for Lancashire at this period are lacking, it is probable that the magnitude of natural increase was at least comparable, and possibly higher. Yet though positive natural increase was widespread in both regions, population growth, as a corollary, was confined almost exclusively to those parishes engaged in the domestic textile industry. These parishes were able to retain their surplus populations because of the better employment opportunities offered by rural industry and were thus able to enter a phase of demographic expansion which in Beaujolais preceded the industrial revolution by nearly a century. As a result, population densities in these upland regions of limited agricultural potential were unusually high in 1801 - substantially higher than densities in areas such as the Saone Plain (which includes some of the richest farming land in France) or the fertile arable lands of the Plain of Lancastria.

(vi) Relationships between Baptisms and Burials: the level of mortality in any society varies in accordance with several variables e.g.

rural/urban environments, age structures, level of technology etc. The precise relationship between births and deaths is not easily defined and probably varies in any one instance between different communities. There are two possible relationships: (1) negative correlation (2) positive correlation.

(1) Negative Correlation: our small sample of Lancashire parishes for the period before 1700 exhibits an inverse or negative correlation between baptisms and burials. Wrigley discovered a similar relationship in the Devonshire parish of Colyton.[35] The explanation he puts forward is that periods which encourage the formation of large numbers of marriages led to a rise in the numbers of births and were periods of low mortality.

(2) Positive Correlation: after 1700 there is a clear trend in both regions towards a positive correlation of baptisms and burials. Periods producing large numbers of births also produced proportionately large numbers of deaths, mainly because of the high levels of infant mortality. In the parishes of St Georges-des-Reneins, St Lager, Dracé and Cublize where burial data appear to be particularly reliable, the relationship between baptisms and burials has been analysed using the product moment correlation coefficient.

Table 3.6 Baptisms and Burials: R Values.

	1737-92	1793-1820
St Georges	+0.46	-0.06
St Lager	-0.05	
Dracé	+0.08	+0.14
Cublize	+0.07	+0.33

R values are generally very low with little significant correlation. However, the value at St Georges under the Ancien Régime is significant at the 95 percent confidence level, and that for Cublize at the 90 percent level (i.e. in the post-Revolutionary

35 Wrigley 1966 op.cit.

and Napoleonic periods.) We can hardly expect, however, to find a strong statistical relationship between the variables though it is interesting that there were no significant inverse correlations and only St Lager and St Georges show any negative tendency.

The idea that in the 18th century births and deaths should be negatively correlated seems less plausible than positive correlation. The main determining factor in the number of deaths in any one year was undoubtedly the level of infant mortality, which at this time was as high as 250-300 per thousand. In this situation large numbers of births automatically mean large numbers of deaths because of the greater numbers of infants at risk. At the same time, favourable economic circumstances conducive to increases in fertility would primarily affect mortality among adult and older age groups. The magnitude of infant mortality can be gauged from figures which show the distribution of age at burial taken from selected registers in Beaujolais and Lancashire.

Table 3.7 Age at Death: Frequency Distribution.

	St Jean (1737-40/49-51)	Affoux (1805-11)	Bacup[36] (1786-88/87-99)	Sweden (1960)	India (1960)
-1	41	36.1	33.2	2.1	32.6
1-4	12	11.6	14.7	0.6	15.1
5-9	8	11.5	5.3	0.4	3.4
10-20	4.5	7	8.2	0.6	4.9
21-39	7	10.1	17.5	2.6	12.8
40-59	10	13.0	7.2	12.9	13.1
+60	18	27.1	16.0	80.8	18.1

With one third to two-fifths of all deaths being infants, and nearly one half being children under five years, a positive correlation between births and deaths would be expected in most years. Table 3.7 shows the similarity in mortality conditions between 18th century England and France and a modern developing country such as India. The contrast between this mortality regime and that of a developed country like Sweden is indeed striking.

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36 Data taken from registers of the Ebeneezer Baptist Chapel, Bacup. RG 4 999 207A, RG 4 1731 207A.

(3.6) Conclusion: on the evidence of parish registers, 18th century population growth in Rossendale and Beaujolais was faster in those parishes where rural industry was the staple of the local economy and agriculture of secondary importance. It seems likely that this phenomenon can be explained by the effects of natural increase rather than through differential fertility levels between industrial and agricultural communities. The presence of industry provided employment opportunities which facilitated the retention of the surplus population of natural increase in situ, thus permitting population growth. The situation in industrial parishes was one of dynamic equilibrium, with the economy always expanding to accommodate increasing numbers. The agricultural economy was less flexible and equilibrium could only be achieved through a constant outward stream of migrants to areas of better employment opportunity. Population levels in these communities therefore showed little change throughout the period.

The existence of differential fertility levels between these two groups cannot be entirely discounted in the growth process. In terms of the chronology and discontinuity of growth discernible in Rossendale in the early 18th century it is probable that a rise in fertility was a key factor in the initial upswing. Its importance following this early period is uncertain and the bulk of population growth in the industrial parishes is doubtless attributable to the process out-lined above. In Beaujolais, the evidence suggests there was little difference in fertility levels between industrial and agricultural groups. However, we must always appreciate the relative crudeness of parish register data and not forget that previous workers in this field have produced evidence to show that industrial groups generally had higher fertility than agricultural groups. Further discussion of fertility must be postponed until chapter 4,

when general fertility levels based on material from the early censuses will be considered. The influence of in-migration on population growth in industrial parishes is equally difficult to assess. In Haut Beaujolais it appears not to have been important: in Rossendale, where growth was more rapid there is some evidence that points to significant in-migration, particularly after 1760.

In sum, 18th century population growth in the industrial parishes of Haut Beaujolais can probably be explained through natural increase and the employment potential of the domestic textile industry in allowing most of this excess of population to remain in situ, while neighbouring, agricultural parishes were suffering substantial net migrational losses. In Rossendale the situation is more complex though the principal cause of growth appears to be the same as that in Haut Beaujolais. We must add that differential fertility between industrial and agricultural groups and in-migration into the industrial parishes may have been important, especially in parishes where the rates of population growth exceeded their powers of natural increase.

Chapter 4: Population Change and the Domestic Textile Industry in the early Censal Period.

There are two main classes of demographic data available at this period in Britain and France: (1) the vital statistics of civil registration, and (2) the national censuses of population.

(4.1) Civil Registration: in England and Wales civil registration of births, marriages and deaths was not introduced until 1837, when the country was divided into some 500 registration districts, each of which were required to send regular returns of vital statistics to the Registrar General. The comparative lateness of the introduction of civil registration meant that in many areas where after 1780 parish registration broke down, there was no effective registration of any sort for over 50 years.

In France vital registration became the responsibility of the municipal authorities following the Decree of 20 September 1792 and the introduction of the 'état civil'. At the outset it is unlikely that this change had any immediate effect in improving the accuracy of registration in Beaujolais; in fact there are indications that it had a contrary effect. Nonetheless, the change imposed a uniformity of method and technique that under the old ecclesiastical system was often lacking. The units of administration for civil registration became the newly created communes. In the vast majority of communes in Beaujolais it is fortunate that the boundaries of these new units corresponded with those of the parishes, thus making possible comparison of demographic conditions under the Ancien Régime with those of post-Revolutionary France.

(4.2) The Early Censuses in England and Wales: until 1801 there were no reliable population totals for England and Wales. The best estimates of population totals were made by calculating natural increase totals from parish registers and deducting these figures from the 1801 census

totals. This method was usually based on Rickman's Parish Register Abstracts that since have been shown to be grossly defective. The first national census of 1801 was followed by regular censuses at decennial intervals, which in the course of the century became increasingly reliable. The early censuses (1801-31) contain a limited amount of information, and certainly the first two are little more than a counting of heads. Population is differentiated on the basis of sex and data are available at the township and parish level.

It seems likely that the first two censuses underestimated the total population by five and three percent respectively. Early attempts to produce a classification of employment structure amount to no more than a crude tripartite division into agriculture, trade and manufacture/handicraft. These categories are far too generalized to be of anything other than the most superficial use. However, at the 1831 census the scope of the occupational enquiry was extended: males over 20 years were alotted to one of seven categories.[1] Though an improvement on previous censuses, the 1831 classification is still too crude to be of significant value.

Age structure was not considered until the 1821 census. The question relating to age was an optional one, both to the census officer and the parties concerned, yet surprisingly the enquiry proved extremely accurate. The printed abstracts of the 1821 census show age structure in quinquennial groups up to the age of twenty, and thereafter in decennial classes. Age data are missing for approximately 11 percent of the population but mainly from compact geographical areas and so do not seriously reduce the value of the bulk of the data. In the townships of Rossendale returns were almost 100 percent. Like most early attempts to enumerate the age of the population

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[1] Agriculture, manufacturing, retailing and handicraft, capitalists, bankers and professional men, non-agricultural labourers, male servants, others.

the data suffer on several counts (e.g. illiteracy, ignorance, dishonesty etc.) the most important in this context being the tendency of older adults (especially females) to understate or else give approximations of their age. This is also a problem in the later censuses, though the effects of approximating age in units of five or ten can to a large extent be eliminated by classifying the entire population in quinquennial groups. Detailed enumeration of age structure was dropped from the 1831 census, the 1821 experiment being considered "deficient and unsatisfactory."[2] The question on age was, however, reinstated in 1841. Information on housing is available in all the early censuses. At the first census an enquiry was made into the numbers of inhabited and uninhabited houses in each township. In 1811 this was extended to include the numbers of houses being built but not yet occupied.

While the first four censuses of England and Wales were in many respects crude and experimental, they are nevertheless invaluable because, as Krause has said, there was nothing to equal them for the whole of the 18th century.[3]

(4.3) The 1851 Census: although material from this census is not used in this chapter, the value of the census is discussed here alongside the earlier censuses. The 1851 census could justifiably be considered as the first truly modern census. Its immediate predecessor - the 1841 census - might lay equal claim to this distinction, though in several respects it is markedly inferior. The 1841 census is not considered here because it has not been used as a major source of data. Evenso, many comments referring to the 1851

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2 Census Abstract 1831. Introduction.

3 Krause 1963 op.cit. p 119.

census are equally appropriate to the 1841 census and to the later censuses of 1861 and 1871.

The 1841 and 1851 censuses are at once more detailed and more penetrating than their predecessors. This is partly because the range of questions included in the censuses was wider than before and also because the original manuscripts of the enumerators' schedules are available for consultation. Thus the researcher is released from his previous dependence on the printed census returns, with their very general classifications of age and occupation. The 1851 census enumerators' schedules became available under the hundred years rule in 1951 and can be consulted in the population section of the Public Record Office under the call number H.O. 107. With the inception of civil registration in 1837 the country was divided into 2193 registration districts, which in 1841 were sub-divided for the purpose of the census into enumeration districts.[4] For comparison with previous censuses these units have been aggregated into the conventional and more easily definable townships. The 1851 manuscripts are in ink and are clearly legible and well preserved. The enumerator was obliged to copy down the details of each household into an enumerator's book.[5] The following questions were asked:

(a) Name of street and house.

(b) Names and surnames of those enumerated.

(c) The head of the family and the relationship of other members of the household to the head.

(d) Their marital status.

(e) Their age and sex.

(f) Their profession or occupation.

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4 M.Beresford: "The Unprinted Census Returns of 1841, 1851 and 1861 for England and Wales." Amateur Historian 1963 Vol.5 8 p 261.
Note:- each enumeration district contained a minimum of 25 households and a maximum of 200.

5 see W.A.Armstrong in Wrigley ed. op.cit. 1966 p 211.

(g) Their place of birth.

(h) Whether they were blind, deaf or dumb.

In addition to the above, those who were self-employed were asked to state the number of workers they employed while farmers were required to give similar information as well as the acreages of their holdings. The 1851 census incorporated two major improvements on that of 1841: first individuals were asked to give their exact age and not merely an approximation to the nearest five years; and second the specific birth-place of each individual was required, whereas previously only the name of the county (or if elsewhere in Britain other than England the name of the country) was asked for.

The main value of the censuses 1841 to 1871 lies in three areas: (1) age-sex structure (2) occupational structure (3) migration. Age-sex structure is more accurate than ever before; occupational data can be manipulated and classified according to the particular needs of the researcher; while place of birth data are available on a scale which permits the reconstruction of regional population movements over space. However, the sheer weight of material available in the schedules makes sampling obligatory (section 4.6). Few detailed studies have been based on the enumerators' schedules, partly one assumes because of the labour involved in extracting and processing the data and partly because of the relative newness (in terms of its availability) of this source. The studies of Lawton[6] and Armstrong[7] are the most important to date, the latter applying punch-card techniques to the problem of processing voluminous data. As the value of such methods is realized further studies will doubtless follow.

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6 R.Lawton: "The Population of Liverpool in the mid-19th Century." Trans.Hist.Soc.Lancs and Ches. 1955 107 pp 89-120.
R.Lawton: "The Economic Geography of the Craven in the early 19th Century." I.B.G. 20 1954 pp 76-93.

7 Armstrong 1966 op.cit.

(4.4) The Early Censuses in France: though there had been several attempts to hold a census of population in the 18th century, the first full, national census did not take place until 1801 following the Law of 28 Pluviose, year VIII (1800). The early censuses were highly defective on several counts and certainly inferior to the English censuses of the period. After 1801, censuses were held at quinquennial intervals, though until 1836 contained little detail being merely enumerations (often inaccurate) of the total population, differentiated according to sex and marital status. Only in 1801, 1806, 1821 and 1831 did anything approaching a true census take place. The so-called censuses of 1811, 1816 and 1826 were simply modifications of the population totals of the previous censuses utilizing the vital statistics of the état civil. They did not therefore take into account the effect of migratory movements and inevitably many inaccuracies appear.

The first census contained the following information: the numbers of men, women, boys and girls and their marital status. The 1806 census which is probably less accurate than that of 1801, enumerated the population by canton and commune into seven categories: married men, married women, boys, girls, widows, widowers and soldiers. The 1821 census used the same format while including an additional column for agglomerated population (i.e. nucleation of more than 1500) as a crude estimate of urban population.

French 19th century censuses can be generally criticised because of the nature of the administrative framework responsible for their organization. The task of enumeration was given to the municipal authorities, and while this system had the advantage that these authorities were familiar with the local population and local conditions, it had serious financial drawbacks. Often the authorities possessed neither the financial resources nor the time to undertake

an accurate enumeration. Added to this problem is the widespread prevalence of fraud and corruption. Some mayors inflated the numbers in their communes for purposes of prestige or to give greater priority to the commune in its administrative role.[8] More often, however, returns would understate the actual population in an effort to reduce taxation. Throughout the century fraud and deceit were common in connection with census taking, and indeed it was not until 1901 that a central bureau of the census was established in France.

Finally we must mention the influence of the 'refractaires'- young adult males seeking to avoid conscription and therefore not included in the censuses of 1806 and 1816. The importance of this group in reducing the accuracy of the population count at these two censuses is unknown, though in a fairly remote rural area such as Haut Beaujolais it may have been considerable. At the same time it ought to be remembered that conscription during the Napoleonic period had the effect of reducing the numbers of young adult males in the actual census figures of 1806 and 1816 quite apart from producing markedly imbalanced sex-ratios.

The early French censuses must therefore be interpreted with caution. Until 1836 they are very short on detail and much of the data they contain are often suspect because of the factors outlined above. Furthermore, under the Second Empire there were no authentic enumerations; merely corrections to previous censuses by the addition of natural increases in the inter-censal period to population totals.

(4.5) The Censuses of 1836, 1851 and 1872: these censuses correspond to those in England and Wales 1841-71 because for the first time the manuscript returns of individual households are available. The

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8 A.Chatelain: "Valeur des Recensements de la Population Française au 19e siècle." Rev.de Geogr.de Lyon 29 1954 pp 275-76.

documents are bound in volumes by canton and are housed in the departmental archives. Entries are made in ink and the general condition of those volumes relating to Beaujolais is first class. The 1836 census manuscripts contain the following information:

(a) Name and surname of each individual.

(b) Place of residence.

(c) Age and sex.

(d) Marital status.

(e) Occupation.

Unfortunately there is no 'recapitulation' by commune of age-sex structure which makes some form of sampling of these parameters imperative. After 1836 the form of the French censuses changed little and the techniques employed remained fairly stable. The 1851 census provides additional information on the nationality and religion of the population by commune as well as on the infirm. However, the chief advantage of the 1851 census over previous and ensuing ones is that each commune contains a summary of age-sex structure, occupations and the distribution of population and buildings thus reducing to quite small proportions the amount of time and effort necessary to extract the relevant information. Urban and rural populations were also distinguished (i.e. population agglomerée and dispersée) while the mayors of each commune were asked to comment on significant demographic changes that had taken place since the previous census - something which in reality they rarely did.

The significance of the 1872 census (which was a year late owing to the Franco-Prussian War) was that for the first time a question relating to place of birth was added to the census format. If the individual was born in France, the commune and the departement of birth had to be stated. Foreigners by birth had to state their country of origin and also whether they had become naturalized

Frenchmen.

Like their English counterparts the French censuses suffer from several general defects. Age data are sometimes suspect largely through the tendency of older females to give their ages in rounded numbers. Official classifications of occupations are too generalized and frequently inappropriate to the work in hand. This problem can, of course, be overcome by sampling and producing one's own classification. Finally it is regrettable that place of birth data are not available until comparatively late and that an enquiry into migration post-dated that in England by over thirty years.

(4.6) Sampling Techniques: the enormous bulk of material contained in the original manuscripts of the 1836 and 1872 censuses in France, and the 1851 census in England makes essential some form of sampling technique. The varying population sizes of townships and communes in the two regions means that it is impossible to use a standard sampling fraction. In Beaujolais in 1872, population totals for individual communes varied from 5,431 at Cours, to 606 at La Chapelle de Mardore. In Rossendale the range was even greater - from 16,915 at Newchurch-in-Rossendale to 598 at Eccleshill. Consequently, a varying sample fraction was adopted relating to the size of the unit concerned. For units above 3,500 a 10 percent sample was taken; for units between 1,500 and 3,500 a 20 percent sample was taken; and for units from 750 to 1,500 a sampling fraction of 30 percent was employed. For very small units such as Eccleshill and La Chapelle de Mardore a 50 percent sample was chosen, while in the case of Dunnockshaw and Henheads the sample fraction was 100 percent. A complete list of population totals and the sampling fractions used can be found in the appendix.

According to the sampling fraction the samples were selected

systematically, taking every third, fifth or tenth household. Institutions such as schools, hospitals and workhouses were not considered in the sample. The nature of the census material precluded a more rigorous statistical approach with regard to the selection of the sampling fraction, and those fractions employed were chosen on a purely arbitrary basis after the method employed by Armstrong[9]. Statistical methods for calculating the size of the sampling fraction are usually based on the sample mean and sample standard deviation from which the standard error is calculated[10]. This technique is not applicable to data relating to the age, sex, occupational and migrational characteristics of the censuses. Furthermore data relating to age are not normally distributed and therefore unlikely to be amenable to most standard statistical techniques.

(4.7) Population Change: in the previous chapter the evidence of parish registers led us to the following conclusion concerning population change in 18th century Beaujolais: that the populations of those parishes primarily engaged in the domestic textile industry grew faster than those parishes where agriculture was the chief source of employment. The main cause of this differential growth was that the agricultural parishes suffered a continuous net migrational loss of population that was sufficient to offset any natural increase and thereby produce conditions of stagnation or at best slow increase. By comparison, communities engaged in rural industry were able to retain their surplus populations in situ because of the better employment opportunities afforded by the domestic textile industry. At the same time no conclusive evidence was produced to suggest that differ-

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[9] Armstrong ibid.

[10] size of sample $n = (s/d)^2$ where s = sample standard deviation, d = desired value

ential growth rates were partly the result of higher fertility among industrial groups in Haut Beaujolais, though this was not necessarily true of Rossendale. Indeed in Rossendale in-migration might also have been important in determining the high rates of population growth in the 18th century.

The period 1801-1836 in Haut Beaujolais in economic terms is really a continuation of the 18th century, with the domestic outwork system continuing to dominate the regional economy. Certain changes had taken place, the most important being the national trend of declining fertility and mortality, which in contrast to Britain occurred in the absence of any significant economic development.

Population change in the early censal period in Rossendale is based on the census of 1821. Although by this date the domestic textile industry in Lancashire was rapidly losing ground to the new factory system, townships survived, even in Rossendale, where the dominant high-order economic system remained that of the domestic textile industry. The evidence of trade directories shows the progress of economic change to have been highly irregular up to 1820 (see table 6.2). Townships such as Haslingden, Over Darwen and Newchurch-in-Rossendale were already absorbed into the new factory system while townships remote from the main river valleys were still dominated by the old domestic system. In these areas therefore, the 1821 census is able to give us a brief, retrospective glimpse of the demography of rural industrial communities as they flourished in the 18th century. This is equally true of the 1836 census in France, and the rural-industrial communes of Haut Beaujolais.

Using the two principal sources of the 1836 census of France, and the 1821 census of England and Wales, in considering population change the following will be dealt with: (1) employment structure (2) fertility (3) sex-ratios (4) population growth.

(1) Employment Structure: table 6 (see appendix) based on a sample study of the 1836 census, reveals a similar employment pattern in Haut Beaujolais to that of the parish registers (table 2.2). There is a clear dichotomy between those communes where the domestic textile industry was the leading economic activity, and those where agriculture predominated. The tripartite division of occupations into industry, agriculture and services is extremely crude but is made virtually obligatory owing to the inconsistent and often vague descriptions of occupations in the manuscript returns. Pursuing the theme of the previous chapter - that economic activity was the major determinant of differential population change - then we might expect to observe differences in the three principal economic groups defined above. However, these groups are not the same as those recognised for Rossendale: in 1821 we are still dependent on the official classification of occupations which as we have seen is exceedingly generalized and of little value. Nonetheless, it seems fairly certain that at this date there were three principal economic groups in Rossendale - the domestic workers, the factory workers and those engaged in agriculture. There was a degree of overlap between these groups, though as we saw in chapter 2 the handloom weavers were a separate group from the agriculturalists in Lancashire, while in Beaujolais dual occupations, in industry and agriculture were more common. With these broad economic distinctions in mind we can turn to the first demographic variable for discussion - fertility.

(2) Fertility: fertility is measured in terms of general fertility for both regions, and in addition some crude birth-rates, where the data are available are calculated for Haut Beaujolais. General fertility is measured by expressing the numbers of females in the reproductive age-groups (15-49) as a ratio of the number of children

aged 0-4 years.[11] Table 4.1 below shows that communes specializing in agriculture in Beaujolais had higher general fertility levels than those communes primarily engaged in rural industry. Affoux which

Table 4.1 General Fertility and Dependence on Agriculture.(1836)

	Fertility Index	% Agriculture
Amplepuis	48	13
Cours	62	6
Chapelle de Mardore	49	
Mardore	36	8
St Jean-la-Bussière	37	36
Bourg de Thizy	45	14
Thizy	29	9
Marnand	38	6
Affoux	62	76
St Clement-sur-Valsonne	51	52
Joux	46	33

together with Cours had the highest fertility index, had the highest percentage of population engaged in agriculture. By comparison, Thizy with the lowest percentage of population in agriculture had the lowest fertility index, while Marnand and Mardore had low percentages of their populations in agriculture and correspondingly low fertility indices. It seems therefore, that the trend in 1836 was for agricultural groups to have higher general fertility levels than other groups, which in the context of Beaujolais meant communities whose primary economic interest was the domestic textile industry. The relationship is not, however, so strong as to be statistically significant using standard correlation techniques. The above sample was tested for the degree of relationship between agricultural employment (independent variable) and fertility (dependent variable). The correlation coefficient (r) was + 0.45 and the Spearman Rank Correlation Coefficient was 0.35, indicating a positive relationship. These coefficients would undoubtedly have proved significant but for the influence of Cours, which in the context of this relationship is highly anomalous.

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11 The terminal age for the female reproductive age group -49 years- was chosen in preference to the alternative of 44 to make possible direct comparison of the 1836 census of France with the 1821 census of England (decennial age sets used above age of 20 in 1821 census).

The clear fertility differential that existed in 1836 between agricultural and industrial groups provokes speculation about the existence of a similar differential in the 18th century. It was shown in chapter 3 that the evidence of the 18th century in this respect remains inconclusive. Given however, the general nature of that evidence and the fact that the economic systems which produced the marked differential of 1836 remained largely stable and unchanged throughout the 18th and early 19th century, we might tentatively suggest that this differential was in fact a continuation of past trends. The possibility that agricultural groups had higher fertilities than industrial groups in the 18th century was not considered in the previous chapter, yet if we now accept the possibility that this was so, then the migrational factor becomes all important in explaining the faster rate of population growth among the industrial communities of Haut Beaujolais at the time.

The fact that fertility was higher among agricultural communities in the early 19th century (and possibly in the 18th century also) need not surprise us. Fertility levels among rural populations today are almost invariably higher than among their urban counterparts, and it should be remembered that rural communities engaged in industry (such as the hand spinners and weavers) were really pseudo-urban: they were urban communities in a rural setting rather than true rural populations, paradoxical though that may seem.

Estimates of crude birth-rates (CBR's) for individual communes in Beaujolais can be obtained by relating births recorded in the etat civil to population totals from the early censuses. The crude birth-rate is not, however, an accurate measurement of fertility as it does not take into account the important effects of age-sex structure. CBR's were calculated for eight communes by taking the median annual number of births in the periods 1800-1810 and 1805-1815

and relating these to the population totals of individual communes for the 1805 and 1811 censuses respectively. Although these data

Table 4.2 Crude Birth-Rates.

	1800-10	1805-15
Amplepuis	37	37
Marnand	44	37
Cublize	53	52
St Jean-la-B.	42	39
Affoux	35	31
Dracé		36
St Georges-des-R.		32
St Lager		37

(table 4.2) are somewhat limited in scope, they suggest that the birth-rate was slightly lower in agrarian communities such as Affoux and St Lager compared to more industrial communes such as Marnand, Cublize and St Jean-la-Bussière. This suggestion seemingly contradicts that made in the preceeding section, where it was concluded that fertility was higher among agrarian groups. However, the CBR is only indirectly a measure of fertility: a community might well have high fertility rates but because of either a deficit of young adults or a high proportion of old people CBR's will be lower than average. Populations distinguished by these characteristics have normally suffered some degree of net migrational loss, with strong out-migration to areas of higher employment potential. We have already established the likelihood of a substantial out-migration from the agricultural areas of Beaujolais, and it is feasible that such losses would be apparent in the age-sex structures of these areas at the 1836 census. In fact the evidence is far from unequivocal, though in 1851 the percentage of the population aged over 40 years in the following communes was: Marnand 25.8; St Jean-la-Bussière 27.5; St Georges 33.0; and Dracé 30.6. The apparent contradiction between fertility levels and CBR's in agricultural and industrial communes might therefore be explained by the effects of excessive numbers of older people in the former communes owing to age selective out-migration.

General fertility levels for Lancashire have been calculated from 1821 censal data on the same basis as those for Beaujolais. Table 4.3 shows general fertility indices for three types of township: rural-industrial (I); urban-industrial (II); agricultural (III). The domestic textile industry dominated the economies of the townships of group I, while group II townships were absorbed in the factory-based textile industry.

Table 4.3 General Fertility Indices 1821.

	I	II	III		I	II	III
Warton	-	-	61	Over Darwen	-	84	-
Westby	-	-	65	Higher Booths	-	84	-
Claughton	-	-	78	Tockholes	81	-	-
Barnacre	-	-	62	Eccleshill	98	-	-
Treales	-	-	84	Chatburn	94	-	-
Newchurch	-	74	-	Y&P Bank	81	-	-
Haslingden	-	77	-	L. Darwen	84	-	-
Lower Booths	-	73	-	Musbury	98	-	-

Fertility levels among each of the three groups are considerably higher than those of Beaujolais in 1836, relecting the higher fertility of Britain in the 19th century compared with France. Table 4.3 suggests that fertility among hand-loom weavers was higher than among the other two groups. The comparison between groups I and II leads to speculation about the influence of rural and urban environments and occupations as determinants of fertility. We have already mentioned that rural populations almost always have higher fertility levels than urban populations. This is due to a multi-variate set of factors, some of which are of an obscure socio-psychological nature. The situation that confronts us here, (assuming the difference between the groups is a valid one), is that populations living in rural areas, but engaged in what is characteristically an urban occupation (weaving) have higher fertilities than those groups living in urban areas with the same or similar occupations. We might tentatively suggest therefore that the rural-urban fertility differential arises from two sets of factors: (i) an industrial or tertiary occupation (ii) the

environment, whatever the nature of its influence may be.

More interesting is the comparison between groups I and III. In Beaujolais we saw that agricultural units had higher fertility levels than industrial ones. In Lancashire the opposite appears to have been the case. The five townships of the Fylde, selected at random, have general fertility levels varying from 62 to 86. In contrast the five townships engaged in the domestic textile industry, (excluding Musbury) and little affected by the factory system in 1821, have values ranging from 81 to 98. The statistical significance of this difference was calculated using the standard error. The actual difference was almost three times the standard error of the difference, suggesting the differences apparent in Table 4.3 to be highly significant.

Given this situation, it now becomes pertinent to ask to what degree the rapid rise in population growth which took place in the early 18th century in the industrial parishes of Rossendale is attributable to higher fertility among industrial groups. In the case of Beaujolais we discounted this theory because (a) the evidence of the 18th century was inconclusive and (b) general fertility in 1836 was higher among agricultural communities. The data for general fertility for Lancashire in 1821, support the explanations of differential population growth for the 18th century discussed in chapter 3: that higher population growth among industrial groups, compared with agricultural groups resulted from the effects of migration and fertility. In France the situation does appear to have been different though this need not surprise us in view of the wide disparities in fertility which existed between that country and Britain in the first half of the 19th century.

(3) Sex-Ratios: variations in sex-ratios are attributable to: (a) the male preponderance of births; (b) the differential effects of mortality between the sexes; (c) migrational factors. In most societies the normal situation is for females to outnumber males. Sex-ratios for Beaujolais, expressed as the numbers of females per thousand males are recorded in table 4.4 below.

Table 4.4 Sex-Ratios 1836 and 1851: Males/1000 Females.

	1836	1851
Cours	934	932
Amplepuis	995	955
Chapelle de Mardore	938	988
Mardore	883	929
St Jean-la-Bussière	894	907
Bourg de Thizy	1001	977
Thizy	988	907
Marnand	988	865
Affoux	980	1009
St Clement-sur-V.	1037	1039
Joux	1026	1071
St Georges-des-R.	-	914
St Lager	-	1070
Dracé	-	1015

There is a clear dichotomy between industrial and agricultural communes in the geographical pattern of sex-ratios. In all communes where the out-work or service industries were important (excepting Bourg de Thizy which had the relatively high proportion of 14 percent of its population engaged in agriculture) females outnumbered males. The reverse is the case in communes showing considerable dependence on agriculture both in 1836 and 1851. These differences result from the migratory movements outlined in the preceeding chapter: movements that were not only age selective, but also sex selective. Agriculture offers limited employment opportunities for young females, whereas the domestic textile industry provides opportunities in a variety of occupations e.g. spinning, weaving, embroidery etc. Hence the industrial communes show a marked surplus of females. However, the preponderance of females in these areas is not so marked as to suggest a movement of females from agricultural

to industrial communes. It is probable that employment opportunities open to women in areas specializing in the domestic textile industry were sufficient to allow these women to remain in situ but not so great as to absorb migrant women from surrounding agricultural communes. Out-migration from these areas might have been of a longer distance nature to towns such as St Étienne or Roanne (or the regional capital - Lyon) where employment in domestic service was probably not difficult to obtain. It seems reasonable to assume the sex-ratios of 1836 to have been more or less invariable for most of the 18th century (discounting the influence of the Napoleonic Wars) and thus we might conclude that differential population change in Beaujolais, from 1740 to 1836 was attributable to migratory movements, and that such movements mainly consisted of young females from agricultural areas in search of employment.

Table 4.5 gives sex-ratios for Rossendale and five townships in the Fylde classified according to the same groupings defined on page 102, for 1821.

Table 4.5 Sex-Ratios 1821.

	I	II	III
Westby	-	-	887
Warton	-	-	1008
Claughton	-	-	1098
Barnacre	-	-	1192
Treales	-	-	1111
Newchurch	-	976	-
Haslingden	-	1009	-
Lower Booths	-	977	-
Higher Booths	-	1008	-
Over Darwen	-	964	-
Tockholes	1024	-	-
Eccleshill	1082	-	-
Chatburn	1083	-	-
Yate & Pickup	1081	-	-
Lower Darwen	1041	-	-

There is a clear preponderance of males in townships primarily dependent on hand-loom weaving and agriculture. The first is counter to the trend established for Beaujolais, but might be explained in the disappearance of the spinning wheel and hand-spinning

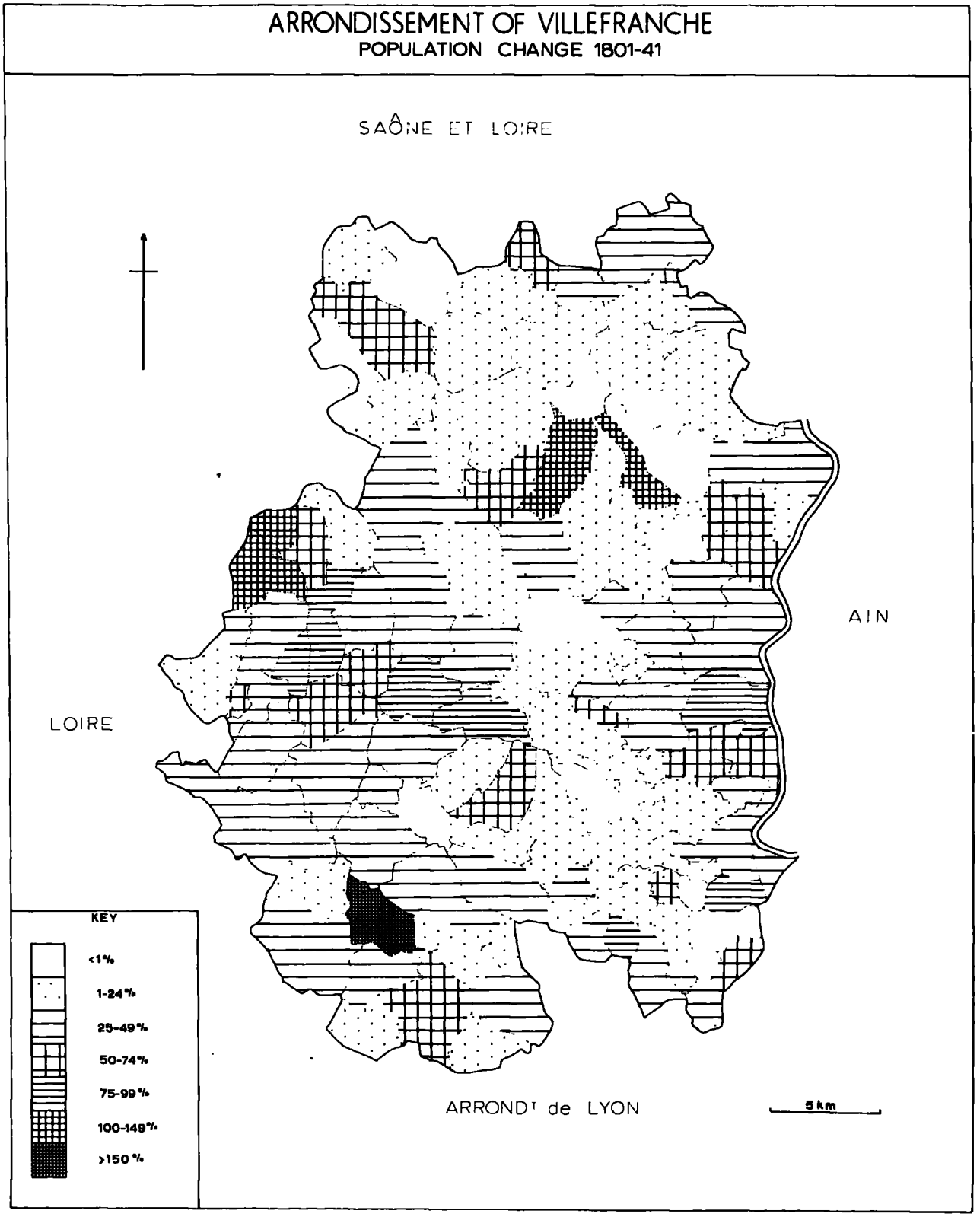
ARRONDISSEMENT OF VILLEFRANCHE
POPULATION CHANGE 1801-41
SAÔNE ET LOIRE
AIN
LOIRE
ARROND^{T} de LYON
5km
KEY
<1%
1-24%
25-49%
50-74%
75-99%
100-149%
>150%

Figure 4.1

(which was mainly women's work) by 1821 in East Lancashire. Employment was to be found in handloom weaving and agriculture, both traditional male occupations. Thus, in contrast to Beaujolais, townships in group I appear to have had little employment potential for women with the corollary that some migrational movement was stimulated by the attractiveness of those townships where the factory system was already well established. Three out of the five townships in our sample in this category (group II) had a preponderance of females while Haslingden and Higher Booths had only marginally more males than females. It seems certain that the proximity of areas of factory industry to areas of domestic industry was, through the process of migration beginning to affect sex-ratios in both areas by 1821. The fact that the spinning industry was now fully mechanized meant that employment opportunities in townships still dominated by the domestic textile industry were considerably reduced. In Beaujolais the stability of the domestic system remained unaffected by the factory system in 1836: in Rossendale the two systems existed side-by-side in 1821 and it is largely to this single fact that we must look in explaining the discrepancy in the pattern of sex-ratios between the two regions.

(4) Population Growth: Beaujolais 1801-40, Rossendale 1801-21 and Central Lancashire 1801-31: the population of the departement of the Rhône increased from 320,000 to 491,000 in the period 1801 to 1840,[12] an increase of nearly 53 percent. During the same period the population of Lyon increased from 90,000 to 190,000.[13] A substantial part of these increases resulted from heavy in-migration,

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12 J.Arminjon: "La Population du Département du Rhône: son évolution depuis le début du XIXe siècle." Thesis of the Faculté de Droit, University of Lyon 1940. p 114.

13 Chatelain 1954 op.cit. p 92.

particularly into Lyon. The net migrational gain was 65,270 - more than a third of the total increase of the departement. Natural increase, calculated from data contained in Arminjon[14] was just over 33 percent. The figure for Lyon would have been slightly lower owing to higher mortality and lower fertility compared with surrounding rural areas.

Figure 4.1 shows the spatial variation of population change in the arrondissement of Villefranche for the period 1801-40. The percentage population growth during this period enables a broad classification of population change to be made. There are three major categories: (i) communes increasing by less than 25 percent (ii) communes increasing by 25 to 49 percent (iii) communes increasing by more than 50 percent. Communes belonging to class (i) were almost certainly suffering some degree of net migrational loss throughout the period. In some communes these losses were so pronounced as to result in an absolute decline in numbers (e.g. Avenas, St Clement-de-Vers, Chiroubles). The central districts of the Beaujolais Massif contain the majority of communes belonging to this class. This area, which is predominantly agricultural includes the high ridges that enclose the valleys of the Azergues, the Ardieres and the Reins, with altitudes varying from 800 to 1000 metres. This is a negative and difficult area for human settlement and was probably an area of continuous out-migration for most of the 18th century.

The communes of class (ii) experienced little net migrational change and population growth was largely a function of natural increase. There are two areas that fall into this category: the textile region of Haut Beaujolais in the west, and the viticultural and agricultural areas of the Côte and the Saône Plain. The influence

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14 Arminjon ibid.

of the domestic textile industry in retaining in situ the surplus population of natural increase is apparent in Haut Beaujolais. The richness of the cultivated areas of the Côte and the Saône Plain had the same effect: in the early 18th century, Cochard described these areas thus:

"Ce pays aujourd'hui couvert d'habitations et un des mieux cultivés de toute la France."[15]

There was, in addition, a handful of communes that underwent rapid population growth as a result of heavy in-migration. These communes form class (iii) and include Cours, Beaujeu, Villefranche-sur-Saône and Tarare. The growth of Tarare was the most spectacular: at the start of the century the commune had a total population of around 2,500; by 1821 this figure had increased to 6,000 and by 1851 the figure had climbed to 13,000.[16] Population growth was entirely a response to the large scale development of the muslin industry. Growth in each of the other communes is related to commerce and industry: at Villefranche and Beaujeu the development of the cotton industry was particularly important while at Cours, rapid population growth is related to the rise of the woollen industry.

Returning to the textile area of Haut Beaujolais, it is evident that population growth there was faster in industrial communes than in agricultural ones. Three of the four lowest rates

Table 4.6 Population Growth 1805-1836.

	1805	1836	%Change
Bourg de Thizy	1055	1805	+70.2
Cours	1981	3985	+101.2
Amplepuis	3446	4881	+41.6
Affoux	452	596	+31.8
Joux	1179	1394	+18.2
St Clement-sur-V.	719	982	+32.4
St Jean-la-Bussière	1122	1768	+57.6
Mardore	1481	2239	+51.2
Marnand	956	1092	+14.2
Thizy	904	1611	+78.2

15 Cholley op.cit. p 34.

16 Arminjon op.cit. p 36.

of population growth in table 4.6 occurred at Affoux, St Clement-sur-Valsonne and Joux, communes as we have seen, which were predominantly agricultural. Most communes experienced growth around or above the average for the arrondissement as a whole (43.1 percent 1801-36). There might have been a small net migrational loss from the communes of Haut Beaujolais that were engaged in agriculture, but if this were the case then it did not compare with the magnitude of loss that seemed to prevail throughout the 18th century, and which led to stagnation or at best very slow growth.

The population of England and Wales increased by 53 percent in the period 1801-31 - from 9.156 to 14.051 millions. Discounting the influence of Irish immigration which was most pronounced after 1840, this increase is explained by the surplus of births over deaths. Dean and Cole[17] have estimated the crude birth-rate at this time at 36.8 and the crude death-rate at 22.5, indicating the extent of the differential between births and deaths which was causing such rapid growth. The rate of growth in Lancashire was faster than the national average, with CBR's running at 40.6 and CDR's at 24.5 for the period. Population increase was 95 percent, almost double that for the nation as a whole, due mainly to heavy in-migration into urban and industrializing areas.

Figure 4.2 shows the spatial variation of population change in Central Lancashire 1801-31. It is convenient to make a similar tripartite classification of population changes to that of Haut Beaujolais (p 107) i.e. (i) townships experiencing net migrational losses of population (ii) townships where population change is almost entirely the result of natural increase (iii) townships experiencing net migrational gains. Those townships experiencing population growth of less than 25 percent (i.e. half the national

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17 Dean and Cole op.cit. p 131.

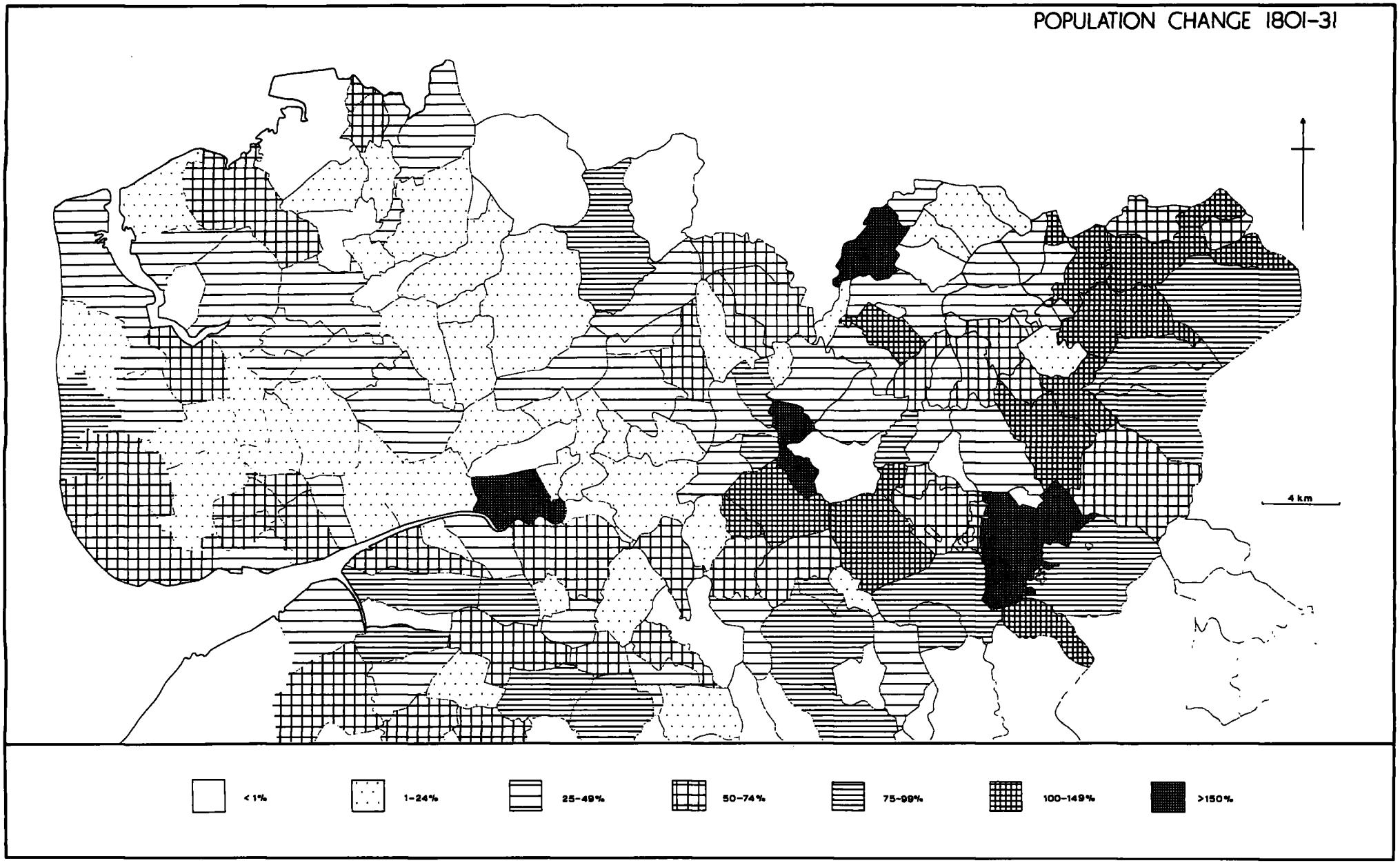
POPULATION CHANGE 1801-31
4 km
< 1%
1-24%
25-49%
50-74%
75-99%
100-149%
>150%

Figure 4.2

figure) were almost certainly suffering some degree of net migrational loss and thus belong to category (i). Indeed many townships in class (ii) where population growth was of the order of 25-49 percent, particularly at the lower end of the scale, probably suffered some net loss though of less magnitude compared to those townships in category (i). There are two main areas that fall into category (i): the Fylde and the Ribble Valley. Apart from the coastal fringes around Lytham and what was later to be the embryonic settlement of Blackpool (i.e. townships such as Marton and Bispham), as well as the old market centres of Kirkham and Poulton-le-Fylde, population in the Fylde rarely grew at more than 30 percent in the period 1801-1831, and in the majority of townships the rate of growth was below 25 percent. Although a fairly rich agricultural area developed on tills and fertile boulder clays, there was only limited scope for agricultural growth and thus little possibility of accommodating the rapid increases of population which had taken place since the end of the 18th century, within the region. Out-migration was probably to nearby industrializing centres such as Preston and Blackburn. However, the evidence of the five townships in the Fylde (table 4.3) suggests that general fertility was comparatively low in this region and this must be taken into account when explaining lower rates of population growth.

The townships of the Ribble Valley and areas to the north-east of Preston (including part of the Bowland Massif) also suffered net migrational losses at this period. These areas, like the Fylde, were predominantly agricultural and outside the Ribble Valley of only moderate fertility and thus offering few employment opportunities in agriculture for the surplus population. Elsewhere, townships belonging to this category were widely scattered, with small concentrations at the extreme western extension of the Rossendale Anticline

RURAL POPULATION CHANGE 1801-1851

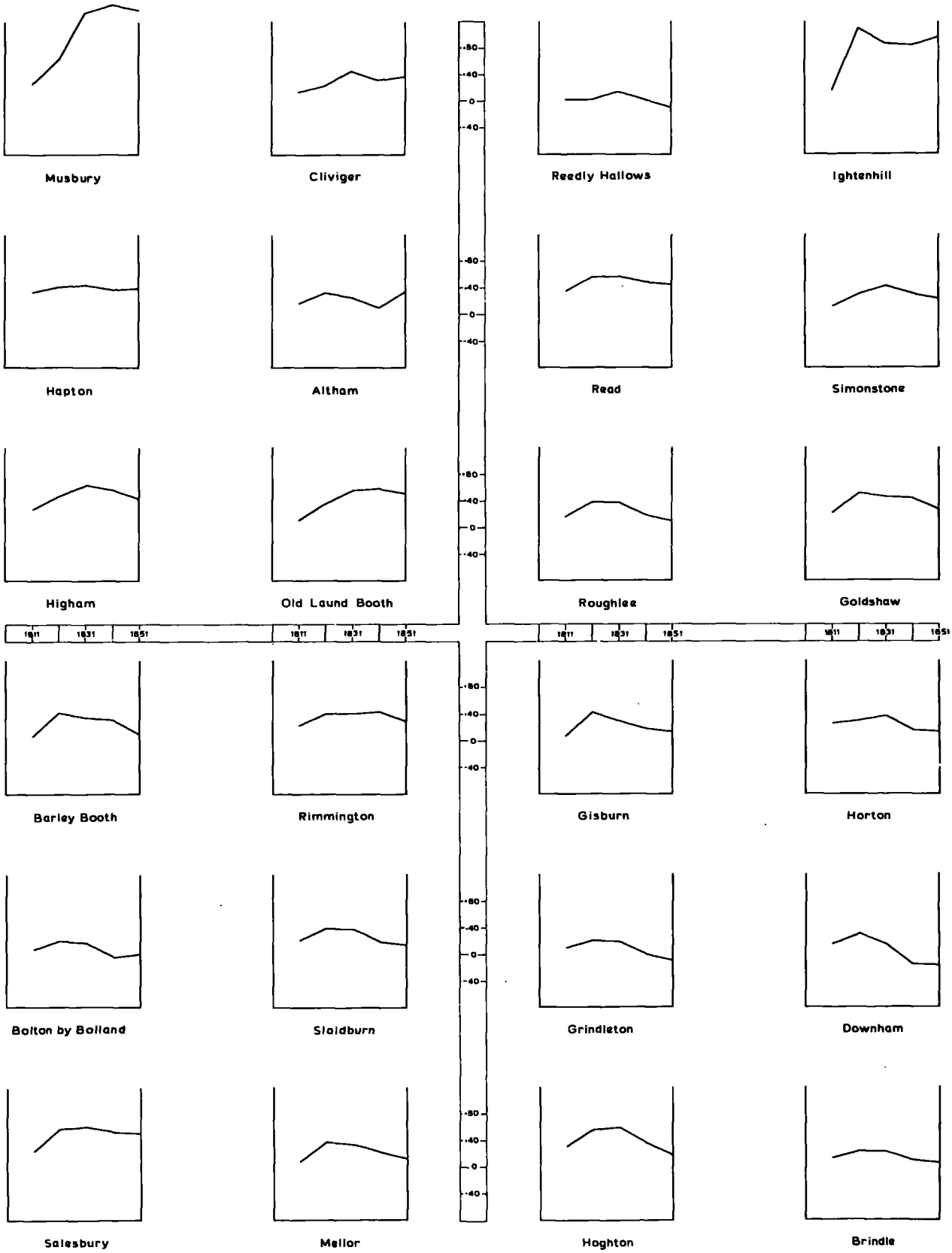

Fig. 4.3

and on the high ground culminating in the summit of Pendle Hill. Yet even at this relatively early date the intensity of out-migration from some townships was such as to produce an actual decrease in numbers. Townships experiencing such dramatic declines included Withnell, Longworth and Entwistle in East Lancashire, and Hambleton and Bowland-with-Leagram in the north and west respectively.

Areas showing population growth purely as a result of natural increase were widespread in Central Lancashire. However, figure 4.2 reveals a concentration of townships of category (ii) (i.e. growth of 25-49 percent) in the Massif of East Lancashire. Most of these townships were still dependent on the domestic textile industry and were as yet little affected by the industrialization of the Rossendale and Calder-Darwen Valleys. Figure 4.3 shows in diagrammatic form the cumulative percentage increases of population in these and similar townships in the period 1801-1851. These townships, nearly all of which are situated in the hill areas of the Pennine fringe show a clear trend of population change in the period. Until 1831 the growth of population was continuous and steady, and on average of the order of 40 percent. After 1831 a marked fall-off in the rate of growth is discernible, which by 1841 is expressed in most townships either by stagnation or absolute decline. 1831 is a turning point: it marks the very last stage in the prosperity of handloom weaving. After this date the outwork industry is in a state of rapid decay with the handloom giving way at considerable speed to the powerloom. Nonetheless, in the period that interests us here the outwork industry continued to flourish, with rates of population growth suggesting that the economic system had sufficient vitality to provide adequate employment for the surplus population of natural increase to remain in situ.

Townships belonging to category (iii) include those areas

experiencing net migrational gains, and as a corollary, very rapid population growth. Those townships that more than doubled their populations are areas of urbanization, expansion resulting from the transference of rural populations to areas of industrial development. The factory system had been established in parts of Lancashire for over 40 years by 1831, producing areas of rapid population growth and high density. A good many immigrants in the larger towns came from outside the region (particularly from Ireland) though most migration was generally intra-regional and short-distance in nature (see chapter 8).

(4.8) Conclusion: chapters 3 and 4 have shown that population growth among communities engaged in rural industries (in this instance the domestic textile industry) in the early and pre-censal periods, was faster than that of contemporary agricultural communities. This finding for Rossendale and Haut Beaujolais supports that of similar studies by Deprez, Chambers and Daveau.[18] The major process by which this differential arose was through the selective effects of migration: the propensity to migrate at this period is seen as a response to the opportunities for employment in the place of birth or origin. The widespread growth of population in 18th century Western Europe posed the problem of under-employment and unemployment in many agricultural regions. In contrast the ever-increasing demand for manufactured products offered employment to growing populations in regions dependent on rural industry. Such regions were able to absorb the surplus population of natural increase while less fortunate agricultural regions suffered a steady net migrational loss and severely retarded population growth. Higher fertility among industrial groups in certain regions exaggerated further the growth differential

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18
Deprez 1965 op.cit.
Chambers 1957 op.cit.
Daveau 1954 op.cit.

though its importance was secondary to that of migration. In Rossendale there are several indications which suggest fertility was higher among rural-industrial groups than among agricultural groups. Deprez and Chambers arrived at a similar conclusion for 18th century Flanders and Nottinghamshire respectively. However, it appears that such a fertility differential was by no means universal: Haut Beaujolais offers an example of a rural-industrial region where if anything fertility was higher among agricultural groups rather than those occupied in domestic industry. Thus in Haut Beaujolais there is nothing to suggest that any other process except migration was responsible for faster population growth among rural-industrial groups.

The final chapter which deals with the domestic textile industry will consider further aspects of demography as well as analysing population density, distribution, settlement etc. of rural-industrial groups in the context of Rossendale and Haut Beaujolais.

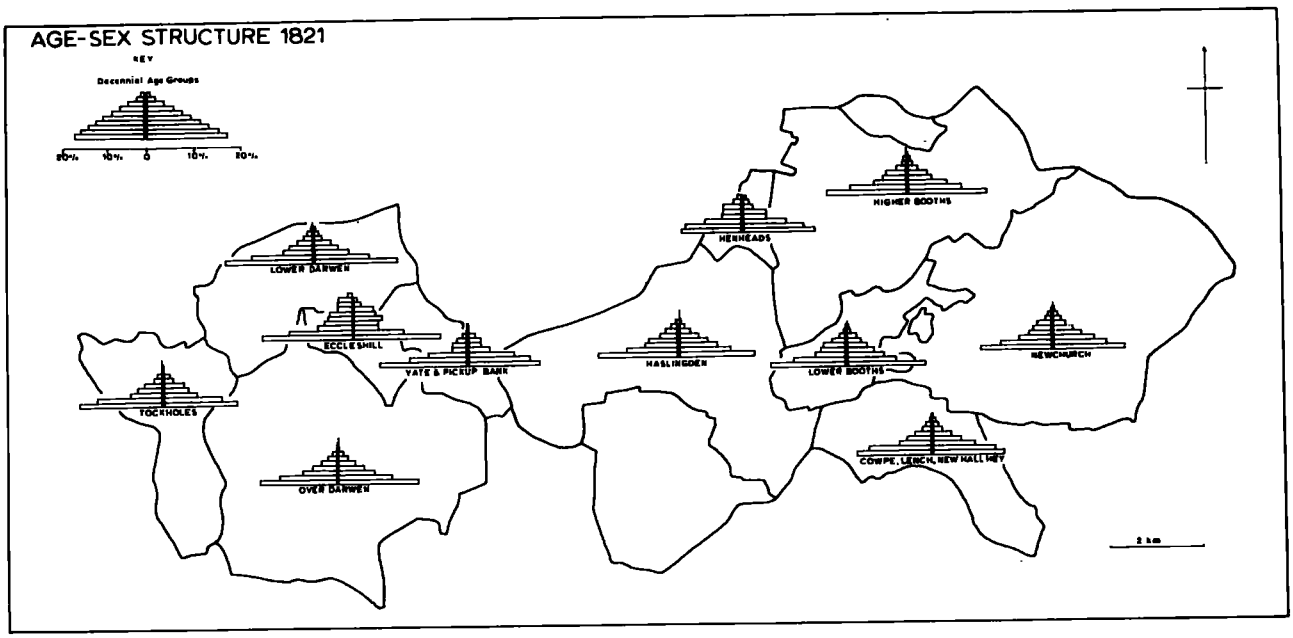
Chapter 5: Geographic and Demographic Patterns of the Domestic Textile Industry in the Early Censal Period.

The influence of the domestic outwork system on the following parameters will be discussed in this chapter: age-sex structure; population density and distribution; and settlement. Finally, in a wider context, consideration of the origins and development of rural industry will be attempted.

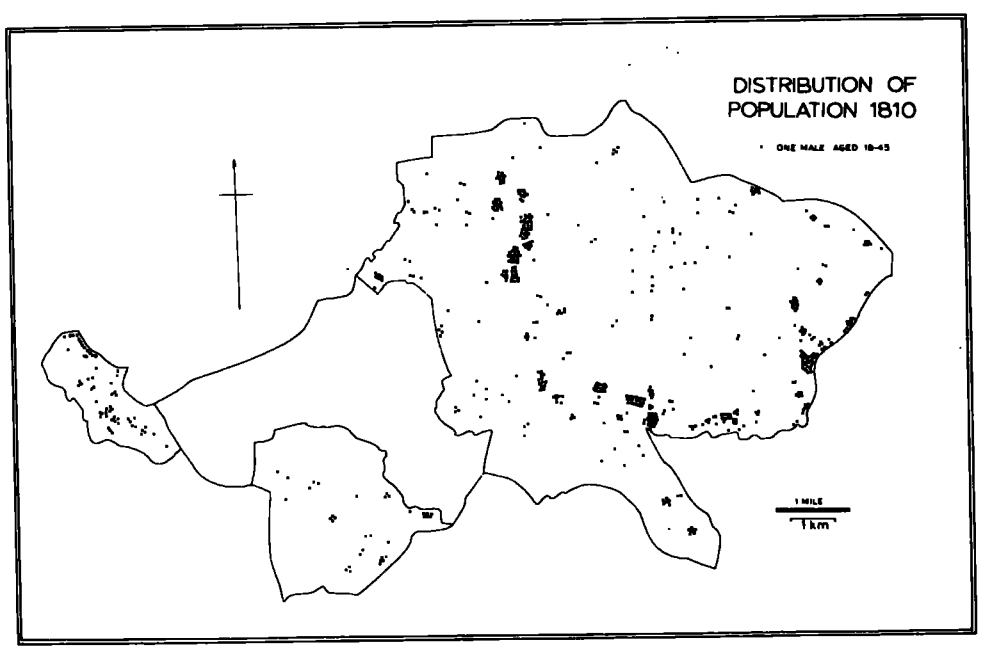
(5.1) Age-Sex Structure: data relating to age-sex structure have been taken from the tabulated summaries of the 1821 census of England and Wales and from a sample study of the 1836 census of France for Haut Beaujolais. The 1821 data is available in quinquennial age groups from 0 to 20 years, and thereafter in decennial groups. The 1836 data has been tabulated in quinquennial age groups throughout the range.

Variations in the percentage of the population of individual townships and communes in the four main age sets (0-14, 15-39, 40-59, 60+) are given in Tables 5.1 and 5.2 below. It can be seen that the major variation between the age structures of Rossendale and Beaujolais is in the numbers of children and young adults, the remaining two categories showing no substantial differences between regions. The age-sex structure of a population is dependent on three variables: (i) fertility (ii) mortality and (iii) migration. The greater percentage of children in Rossendale is undoubtedly a reflection of the higher fertility of this area ,which was discussed in chapter 4. In each of the 15 townships of East Lancashire in Table 5.1 the number of children outnumbered the number of young adults whereas in Beaujolais this was the case in only two communes out of eleven. (Cours and Affoux).

Age-sex pyramids for Rossendale and Beaujolais are illustrated in figures 5.1a and 5.2. The broad based pyramids of Rossendale


AGE-SEX STRUCTURE 1821
KEY
Decennial Age Groups
20%. 10%. 0 10%. 20%.
LOWER DARWEN
ECCLESHILL
YATE & PICKUP BANK
TOCKHOLES
OVER DARWEN
HERNEADS
HIGHER BOOTHS
HASLINGDEN
LOWER BOOTHS
NEWCHURCH
COWPE, LENCH, NEW HALL HEY
2 km

A


DISTRIBUTION OF
POPULATION 1810
ONE MALE AGED 18-45
1 MILE
1 km

B

Figure 5.1

are clearly 'progressive' (though this characteristic is accentuated in Fig 5.1a because of the employment of decennial age groups), implying that differences in the percentage of population in each class results primarily from differential mortality between age sets. The prepoderance of children and young adults (around 80 percent of the population) reflects the high fertility of the period from 1780 onwards, which only came to an end after the first quarter of the 19th century. With 45 percent of the population in 1821 aged under 15 years conditions are parallel to those in many parts of the developing world today.

Table 5.1 Age Structure of Rossendale 1821.

	% 0-14	% 15-39	% 40-59	% 60+
Chatburn	44.9	34.0	14.5	6.6
Cowpe, Lench etc.	44.3	40.0	11.7	4.0
Downham	42.8	34.0	16.9	6.3
Dunnockshaw	48.1	35.1	11.7	4.0
Eccleshill	49.6	32.7	12.4	5.3
Haslingden	45.1	36.7	13.5	4.7
Henheads	43.1	36.2	14.2	6.5
Higher Booths	46.4	36.0	13.6	4.0
Livesey	48.0	34.7	13.6	3.7
Lower Darwen	48.6	36.6	11.0	3.8
Lower Booths	43.0	36.0	15.1	5.9
Newchurch	42.6	37.0	14.3	6.1
Over Darwen	46.6	38.2	11.4	3.8
Yate & Pickup Bk.	48.1	36.6	11.2	4.1

In Beaujolais by comparison, age structure shows distinct regressive characteristics, with young adults outnumbering children. The explanation lies in the secular decline of fertility in France in the period following the Revolution. The causes of this decline are many, though the practice of deliberate family limitation, as well as imbalanced sex-ratios after 20 years of continuous war, were particularly significant. In the period 1806 to 1836 the crude birth rate of France fell from 31.7 to 30.5 per thousand.[1] This regressive movement was already resulting in an 'ageing of the population at the base' of the age-sex pyramid in 1836. This process is especially

[1] Arminjon ibid.

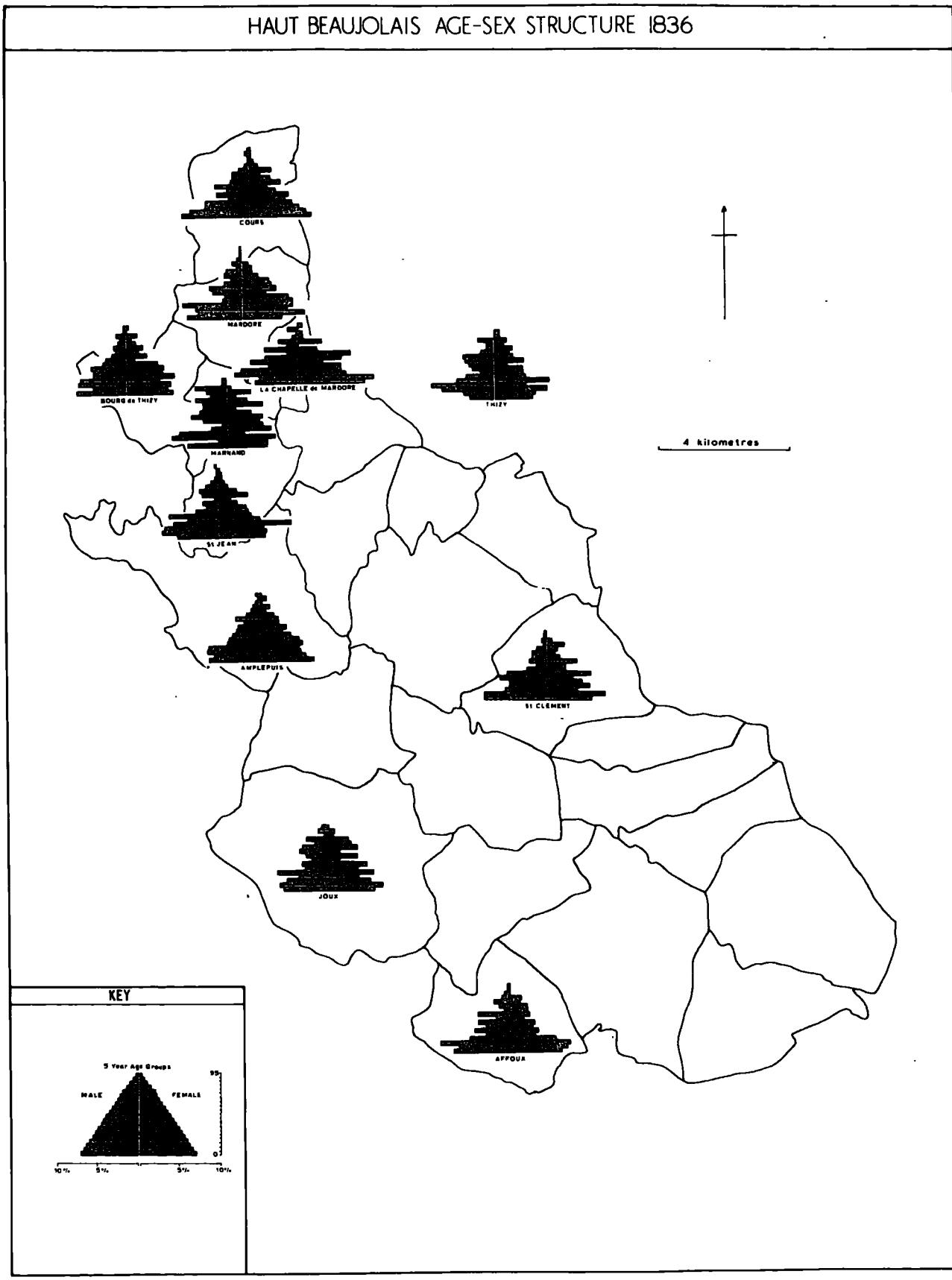

HAUT BEAUJOLAIS AGE-SEX STRUCTURE 1836
COURS
MARDORE
BOURG de THIZY
LA CHAPELLE de MARDORE
THIZY
MARNAND
4 kilometres
ST JEAN
AMPLEPUIS
ST CLEMENT
JOUX
AFFOUX
KEY
5 Year Age Groups
MALE
FEMALE
95
0
10%
5%
5%
10%

Figure 5.2

evident at Thizy, a small urban settlement where the percentage of children (28.7) was lower than in some developed countries today. The pyramids of Rossendale approach fairly closely the classic shape associated with a juvenile population where ageing had not yet begun to take place.

Table 5.2 Age Structure of Haut Beaujolais 1836.

	0-14 %	15-39 %	40-59 %	60+ %
Thizy	28.7	40.4	20.9	9.9
Bourg de Thizy	33.2	45.3	14.4	7.1
St Jean la Bussière	34.7	43.6	15.9	6.0
Mardore	35.2	43.6	17.2	5.0
Marnand	33.6	43.5	17.9	5.1
Chapelle de Mardore	37.5	46.3	13.9	2.4
Cours	40.8	37.7	17.8	3.7
Affoux	41.8	35.2	15.4	6.6
Joux	33.1	35.6	21.7	8.5
St Clement	36.3	42.1	15.0	6.6
Amplepuis	34.9	40.7	18.3	5.8

We saw in chapter 4 that fertility was higher among rural groups engaged in industry than among their urban counterparts. It is not surprising therefore to find that townships involved in rural industry such as Tockholes, Eccleshill, Yate and Pickup Bank and Livesey have larger proportions of their total populations in the age group 0-14, compared with urban townships like Haslingden, Over Darwen and Newchurch-in-Rossendale. The latter were, however, areas of considerable in-migration, as is proved by their growth of population 1801-1821, which far out-stripped their powers of natural increase.[2] The effect of net migrational gain on population structure is not easily defined, though we can assume that immigration was (i) of recent origin and (ii) comprised mainly young adults. This ought to produce an increase in the proportion of young adults relative to the other age sets, and to townships elsewhere, and also a concomitant increase

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2 The population of Haslingden increased by 65 percent 1801-21; Over Daewen by 87 percent; Cowpe by 80 percent; and Newchurch by 69 percent.

in proportion of children compared with proportion of older adults and aged. The latter effect however, might be cancelled by the general lower fertility of urban areas. Nonetheless, we might expect a significant increase in the proportion of the population aged below 40 years. Within Rossendale it is not possible to discern such differences between rural and urban townships, suggesting that intra-regional migration was on a comparatively small scale. On the other hand, Downham and Chatburn, located on the periphery of the hand-loom weaving area, and being involved in both industry and agriculture show relatively high percentages of their population aged over 40 years. (21.1 and 23.2 percent respectively). It seems plausible that these townships were already suffering a net migrational loss of population to the nearby industrializing areas (in this case most probably to Clitheroe), which was producing an ageing of the population. With regard to migration within Rossendale, we might tentatively make the following statement: population growth in the urban areas resulted partly from heavy immigration in the period 1801-1821, but this immigration did not yet come from the townships located within the functional region of the domestic textile industry, but from agricultural townships, often outside the region.

In addition to being age selective, migration is also sex selective, emphasising differential employment opportunities between place of origin and place of destination. If internal migration in Rossendale was small at this period it was because the differential employment potential between rural and urban areas was equally small. Beaujolais, with its greater dependence on agriculture had proportionately greater employment differentials than Rossendale, and therefore probably greater internal population movement. In an effort to try and detect such movements (in the absence of migrational data from

the censuses, which only become available in 1872) sex-ratios in the young adult age group were considered. To some extent variations obviously depend on sample size, and only for those communes where a marked inbalance between the sexes is apparent will further discussion be attempted. These communes, with the percentage of females in the young adult group were: Cours 56; Mardore 61; Marnand 58; and St Jean la Bussière 53. Only St Clement sur Valsonne showed any appreciable male bias (55 percent). In the young adult age group sex-ratios in the absence of migration should be fairly evenly balanced. The very marked deficit of males at Mardore does not seem to indicate a substantial net migrational gain of females. At Marnand however, the small percentage of males, coupled with the fact that popualtion growth was only 14.2 percent in the same period does suggest an out-migration of substantial proportions, and an overall net migration loss. The preponderance of males at St Clement, and to a less extent, at Affoux and other predominantly agricultural communes, resulted, as we have already seen, from an out-migration of females to areas which offered better prospects for female employment.

It has only been possible to compare age structure <u>within</u> areas here, as the period of the domestic textile system in England is only covered in this respect by the census of 1821. In Chapter 7 the temporal factor will be introduced when we consider these and similar parameters through time as well as in space. In 1821 Rossendale had a broad-based population pyramid reflecting high fertility and a youthful population. In Beaujolais the national trend towards declining fertility was apparent in 1836, with an ageing population and a pyramid which was 'regressive' compared to the 'progressive' character of that of Rossendale. These first signs of ageing 'at the base' were to become increasingly evident in the course of the century and produce in France a highly distinctive population structure

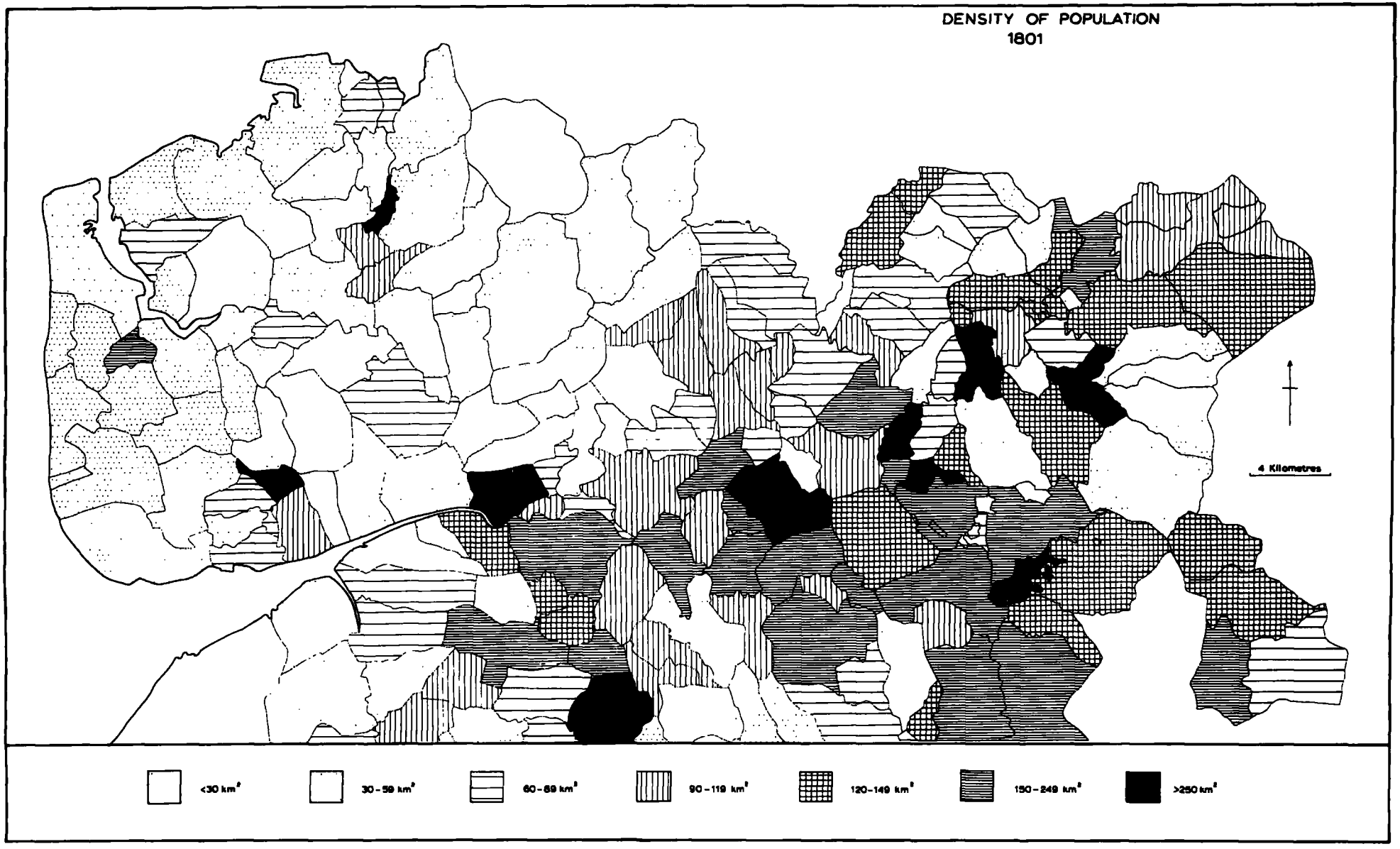
DENSITY OF POPULATION
1801
4 Kilometres
<30 km²
30-59 km²
60-89 km²
90-119 km²
120-149 km²
150-249 km²
>250 km²

Figure 5.2

compared to other European countries at the time.

(5.2) Density of Population: figures 5.3 and 5.4 show the geographical variation of crude density of population per kilometre^2 in Central Lancashire and Beaujolais in 1801. The major problem in mapping and interpreting population density concerns the areal units for which data are available. At a local scale the administrative units of township and commune are rather coarse, and often mask important internal variations. This is more a problem in relation to Lancashire where there are often very abrupt changes in density between urban and rural areas. The high densities of townships such as Haslingden and Over Darwen conceal the fact that a large proportion of the total area of each unit comprises exposed plateaux surfaces, with extremely low population densities. For this reason it was considered more meaningful to view densities at a regional scale. Thus densities are analysed for the whole of Central Lancashire and for the arrondissement of Villefranche.

The density (and distribution) of population can be regarded as a summation of a set of demographic, socio-economic, environmental and geographic processes operating over space and through time. The two density maps of 1801 reflect the operation of the two principal economic systems of the two regions throughout the 18th century - the domestic textile (outwork) system and the agricultural system. In Lancashire, however, it must be remembered that the late 18th century saw the introduction of a third system - the factory system - and that even by 1801 certain townships had been affected by industrial change. In spite of this, the influence of industrialization at this time is not great, and the maps give us a valuable, indeed our only insight, into the density patterns of the 18th century.

The density pattern of Central Lancashire in 1801 can be summarized thus: high density in the upland areas of the Pennine

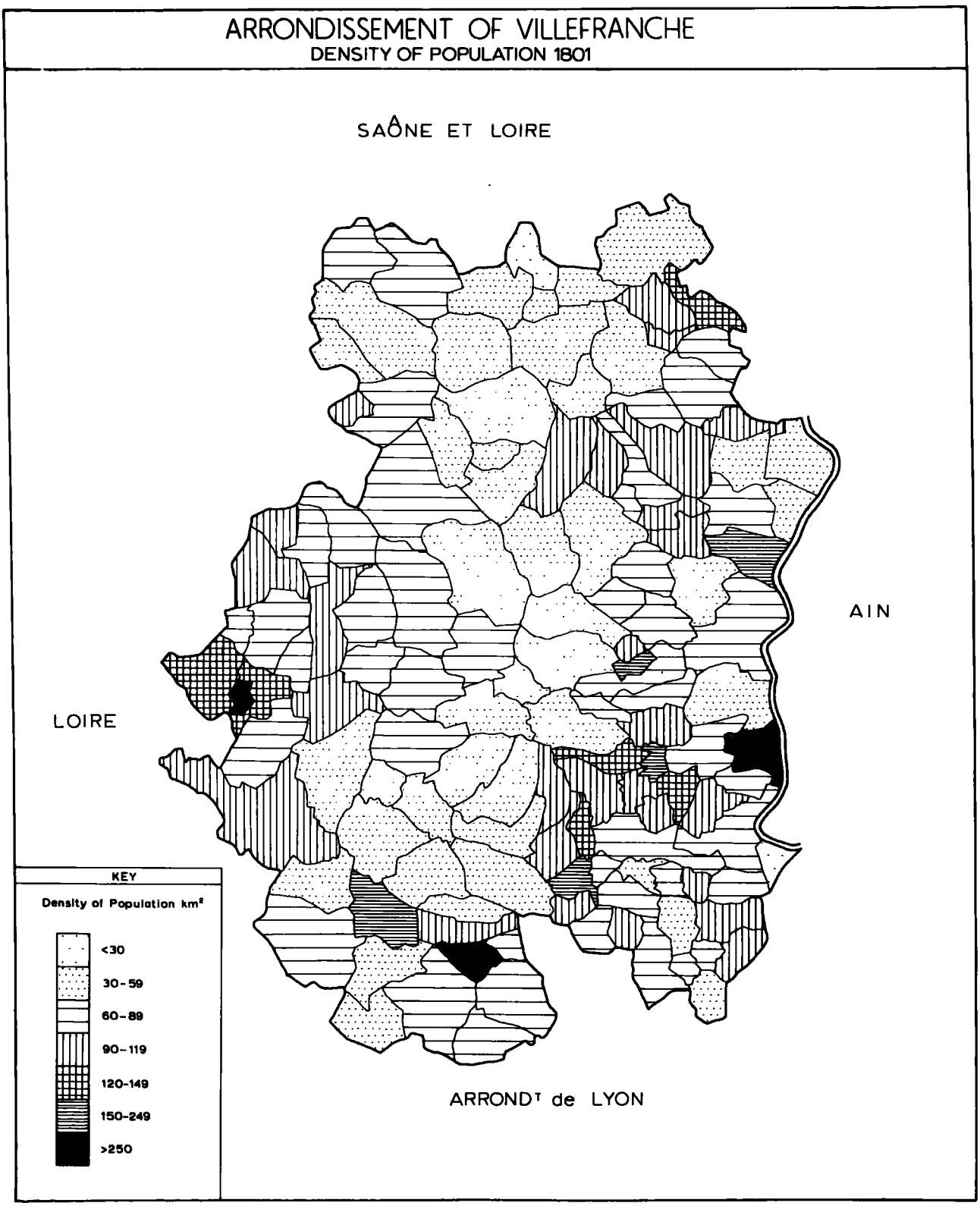
ARRONDISSEMENT OF VILLEFRANCHE
DENSITY OF POPULATION 1801
SAÔNE ET LOIRE
AIN
LOIRE
ARROND^{T} de LYON
KEY
Density of Population km²
<30
30-59
60-89
90-119
120-149
150-249
>250

Fig. 5.4

fringe; high density in the townships of the Fylde which contained small market towns e.g. Garstang, Kirkham, Poulton-le-Fylde; and in the expanding industrial centres such as Preston, Blackburn and Burnley; moderate densities (30-60 per km^2) in the agricultural lowland areas of the Fylde and Ribble Valley; and low densities (i.e. less than 15 per km^2) in the townships bordering the Bowland massif. The most striking feature of density distribution in the region, was the high density of population in the townships in the sub-region of the Rossendale and Pendle Anticlines. Rossendale and the adjacent upland areas are, as we have seen, areas of strictly limited agricultural potential, with high exposed surfaces, steep slopes, narrow valleys, acidic soils and excessive rainfall. Productivity was meagre and oats and potatoes were the only food crops which could be grown with any success.[3] Cattle breeding had been important since mediaeval times, but fodder was scarce and surplus calves were sold off in autumn to farms on the Lancashire Plain where they were reared.[4] Though for most of the 18th century the area was absorbed in a money economy, a quasi-subsistence economy was not unknown, and Wadsworth and Mann[5] have shown that some weaving families still depended on the oats they grew on their smallholdings as a valuable supplement to the family economy. High densities of population in this part of Lancashire are in no way related to the agricultural system but are a direct result of the presence of the domestic textile industry in the region. In the absence of this form of economic organization there is no reason to believe that densities would exceed those found in contemporary Bowland, whose agricultural potential was not dissimilar.[6]

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[3] W.Marshall: "The Review and Abstracts of the County Reports of the Board of Agriculture." Vol.I 1818 reprinted 1969 p 56.

[4] E.Kerridge: "The Agricultural Revolution." 1967 p 164.

[5] Wadsworth and Mann op.cit. p 322.

[6] Densities (1801): Bowland-with-Leagram 9.7 km^2; Bleasdale 6.9 km^2; Little Mitton 12.9 km^2.

Densities in the Fylde, the Ribble Valley and the northern fringes of the Plain of Lancashire to the south-west of Preston were of the order of 30-59 persons per kilometre^2 - what we might expect in fertile lowland areas with favourable conditions for intensive agriculture.

The density map for the arrondissement of Villefranche (synonymous with the area of the old province of Beaujolais) shows three areas of comparatively high density: (i) the three principal towns of the region - Villefranche-sur-Saône, Tarare and Thizy.(ii) the viticultural areas of the Côte and the rich arable communes bordering the Saône Plain. (iii) the communes of the textile region of Haut Beaujolais with densities of 90 persons per kilometre^2 and above. Less densely populated areas included the central mountainous district of Haut Beaujolais and a small number of communes located on the flood plain of the Saône and liable to flood hazard (e.g. Amberieux, Dracé, Taponas).

As in Central Lancashire, the most outstanding feature of figure 5.4 is the relatively high population densities of those communes engaged in the domestic textile industry i.e. the communes of the textile region of Haut Beaujolais. The agricultural potential of this area, like Rossendale, was severely limited by adverse physical factors (chapter 1). Brisson,[7] a local historian of the late 18th century gives a detailed picture of the agricultural systems that prevailed at this period. Local agriculture, he states, could support barely half the total population, and concludes:

"qu'il ne peut y aucun doute, sans les manufactures, les habitants de nos montagnes seraient obligés de s'expatrier au moins une partie de l'année."

No more than two consecutive harvests could be taken from the same

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[7] Brisson op.cit. p 266.

land, after which it was necessary to allow the fields to lie fallow for several years and cover themselves with broom and gorse. Rye was the main cereal crop though a mixture of rye and wheat was also common. Potatoes were the staple food crop and often eaten in place of bread.[8] Comparison of the agricultural value of the mountainous area of Haut Beaujolais with the lowland area of the Côte and plain is possible from data abstracted from the 'Statistique Agricole' of 1857.[9] Yields for the cantons of Thizy and Tarare are compared with those for the canton of Belleville located on the rich alluvial and gravel plains of the Saône and also within the prosperous wine growing area of the Côte (table 5.3).

Table 5.3 Yields per Hectare 1857.

	Belleville	Tarare	Thizy
Wheat	25	12	15
Wheat/Rye	18	9	8
Rye	24	12	10
Barley	30	18	13

Agricultural productivity in Bas Beaujolais was nearly twice that of the mountainous districts. In consequence, the rich agricultural areas of the lowlands were able to support crude densities of between 60 and 90 persons per kilometre^2. In contrast, densities in the purely agricultural communes of Haut Beaujolais averaged around 45 to 50 per kilometre^2. These figures indicate how much more favourable an environment for human occupance and agriculture was Beaujolais compared to Lancashire. The comparable densities for upland and lowland townships in Lancashire at this period were 15 and 30-60 persons per kilometre^2 respectively. Without the textile industry we can imagine the cantons of Tarare and Thizy with densities approaching those of cantons such as Monsols and Lamure in the central plateau area.

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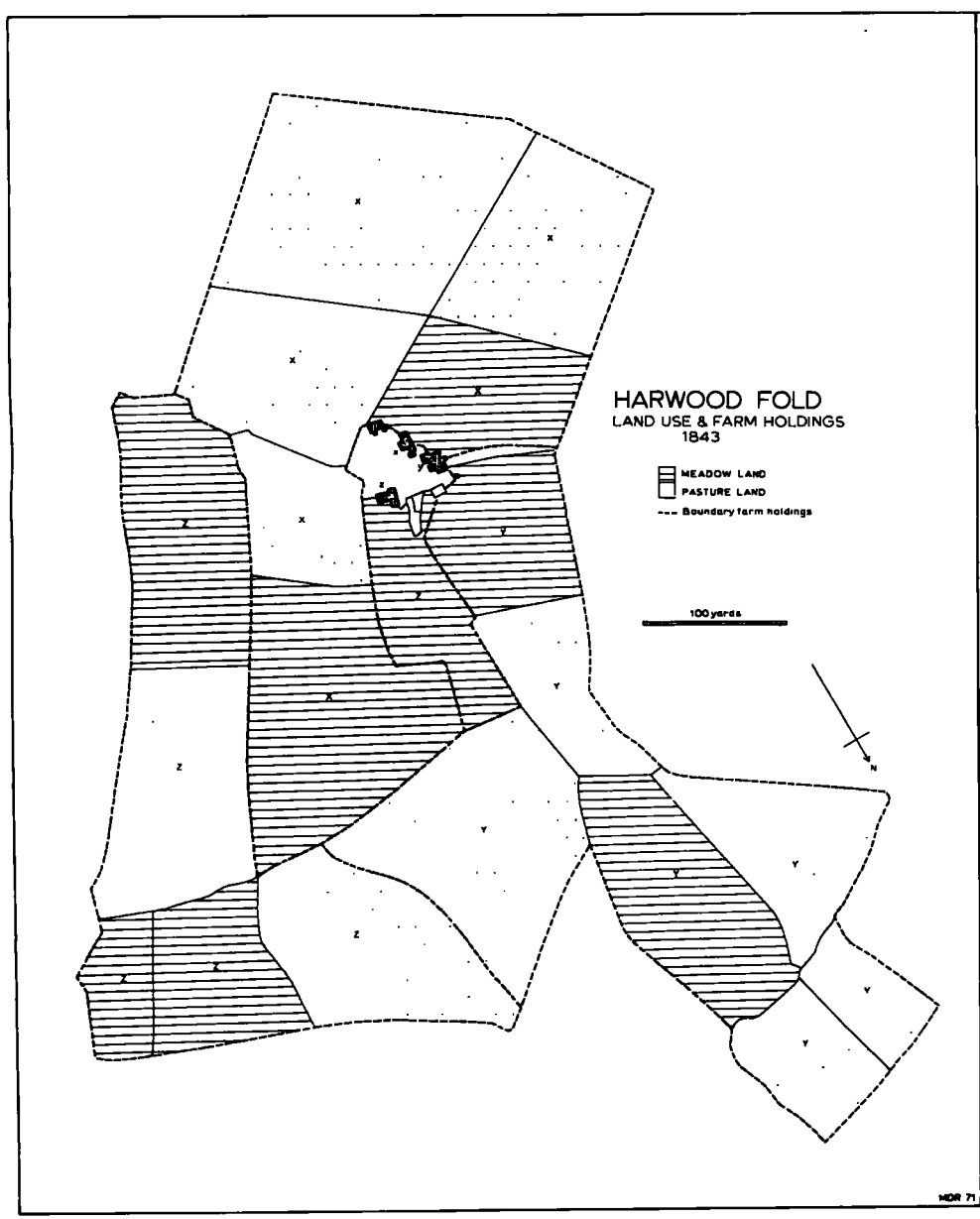
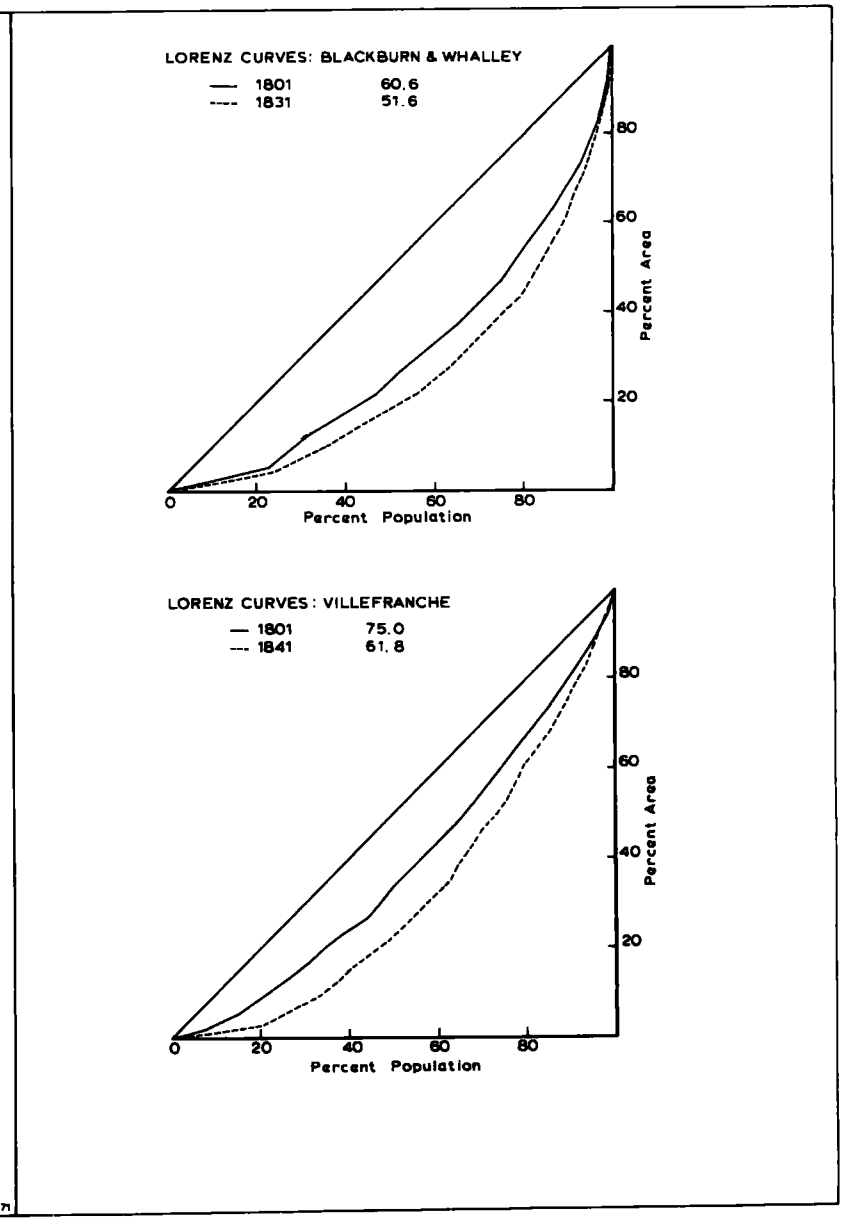
8 Brisson op.cit. p 266.

9 Statistique Agricole 1857 Series M.


HARWOOD FOLD
LAND USE & FARM HOLDINGS
1843
MEADOW LAND
PASTURE LAND
Boundary farm holdings
100 yards
N
MDR 71

A


LORENZ CURVES: BLACKBURN & WHALLEY
1801 60.6
1831 51.6
0
20
40
60
80
Percent Area
Percent Population
LORENZ CURVES: VILLEFRANCHE
1801 75.0
1841 61.8
0
20
40
60
80
Percent Area
Percent Population

B

Figure 5.5

In simple terms, the density patterns of both Beaujolais and Central Lancashire can be seen as a function of the agricultural value of each commune and township, with the clear dichotomy between mountain and plain. There is one exception to this simple pattern - the effect of the domestic textile industry, which in Haut Beaujolais and East Lancashire raised the density of many upland areas to parity with surrounding, lowland, agricultural areas. However, densities in communes dependent on rural industry in Haut Beaujolais are substantially below those of industrial townships in Rossendale and East Lancashire. This situation arises from two main factors: (1) the rate of population growth throughout the 18th century in areas involved in rural industry in Rossendale was more vigorous than in comparable areas of Haut Beaujolais. (2) dependence on rural industry was more extreme in Lancashire. In Haut Beaujolais there was more nearly a dual economy, with a more complete integration of agricultural and industrial systems. This was in part facilitated by the region's greater agricultural potential compared to Lancashire. Densities of population in the industrial townships of Central Lancashire, even taking into account the effects of the new factory system, were almost double those of Haut Beaujolais.

Comparison of the distributional pattern of population density can be taken a stage further utilizing the Lorenz curve (fig. 5.5b). Cumulative percentages of areas of townships and communes (Y axis) are plotted against the cumulative percentages of population (X axis). If the population is perfectly evenly distributed the curve will form a diagonal of 45 degrees. In 1801 it can be seen that the curve for Villefranche approximates more closely to the diagonal than that for the parishes of Whalley and Blackburn,[10] thus indicating a

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[10] These parishes covered the greater part of the hill areas of East Lancashire and included Rossendale.

more even distribution. The extent of this 'eveness' can be quantified using Gini's concentration ratio which expresses the area beneath the Lorenz curve as a percentage of the area beneath the diagonal. The ratios show a clear disparity between the two regions (Villefranche 75.0 and Whalley and Blackburn 60.6).

Comparison of figures 5.3 and 5.4 showing population density, with those showing population change in the early 19th century (figs. 4.1 and 4.2) makes apparent that the most densely populated areas in 1801 were the areas of most rapid population growth in the first thirty years or so of the century. The theory is that areas of high density were areas of high employment potential and were able not only to accommodate their own natural increases of population, but at the same time absorb migrants from surrounding areas of smaller potential. In this way the pattern of density is always becoming more accentuated, with already dense populations becoming denser and thin or moderate densities becoming sparser or else remaining unchanged. This conclusion supports the theory of Losch who suggested that regions already densely populated and growing attract still more population.[11] It follows from this statement that density patterns will show little change over time and indeed Colin Clark[12] has produced evidence which reveals that density patterns in late 18th century Europe are very similar to those of today.[12] Again, the stability of population density patterns in Beaujolais and Central Lancashire during the last 170 years corroborates the theory of Losch and the evidence of Clark, except that the patterns of the early 19th century in these two regions were as much a response to rural industry as to agriculture (Clark assumed that densities in 1831 were

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11 A.Losch: "The Economics of Location." 1954.

12 C.Clark: "Population Growth and Land Use." 1967 p 288.

almost entirely a result of an agricultural economy). Nonetheless, it is quite remarkable that in spite of the major discontinuities of the economic and demographic systems caused by the industrial revolution, the density patterns of 18th century Beaujolais and Central Lancashire should have largely been preserved to the present day.

However, the main conclusion to be drawn from this brief discussion of population density is that areas dependent in some degree on rural industry have higher densities of population than areas of comparable agricultural potential without involvement in extra-agricultural activities. Though the density data only relate to 1801, it is likely that relatively high density was characteristic of industrial communities in the 18th century. Higher density was a result of faster rates of population growth in industrial communities compared with their agricultural counterparts (see chapter 3) which in turn was a function of the better employment opportunities to be found in the former.

(5.3) Population Distribution and Settlement: in section 5.2 population density was considered at a regional scale. The more detailed patterns of population distribution and settlement, within the narrower confines of Rossendale and Haut Beaujolais will be dealt with here. First, however, a brief resume of the available cartographic evidence and the statistical techniques for analysing point distributions will be given.

(i) Cartographic Evidence: the major source of cartographic information on the distribution of population and settlement in the early 19th century in France is the 'ancien cadastre parcellaire'. The cadastre comprises a detailed ground survey of every commune for the purposes of tax collection. It followed the law of the 15 September 1807, and by 1814 over 9,000 communes had been investigated and

mapped using elementary trigonometrical methods. A precise account of the nature of the cadastre and its history throughout the 19th century is given by Clout and Sutton.[13]

The maps of the 'ancien cadastre parcellaire' were examined for the canton of Thizy. These maps, completed in 1812-13 are bound in two volumes and are in manuscript form.[14] There are two types of map: the master plan, giving an overall coverage (usually at a scale of 1:10,000) and showing the distribution of settlement and the division of the commune into sections of the larger scale 'plans parcellaires'. These are usually at a scale of 1:2,500, though for some of the larger 'bourgs' the scale is 1:1,250. The 'plans parcellaires' contain a wealth of detail of great value to the historical geographer requiring the fine detail necessary for the study of settlement and land ownership. The documents accompanying the maps - the inventories of landholdings and the alphabetical registers of landowners - are not available for the study area.

Cartographic material of the same period in Britain in no way compares with the detail and accuracy of the French cadastre.[15] There is no single major source of evidence and it is often necessary to reconstruct the general spatial picture from a composite series of sources, the chief of which are: (a) the county maps (b) estate plans (c) tithe maps (d) enclosure awards and plans.

There are three county maps that cover Lancashire in the period 1790-1830: Yates's map of 1794; Greenwood's map of 1818; and Teasdale's map of 1828. All of these maps show approximately the same amount of detail at a scale of around one inch to one mile. Their

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13 H.D.Clout and K.Sutton: "The Cadastre as a Source for French Rural Studies." Agricultural History XLIII 1969 pp 215-223.

14 Archives Départementales du Rhône: 3PL 552/553.

15 for a more detailed discussion see J.B.Hartley: "A Map of the County of Lancashire 1786, by William Yates." Hist.Soc.of Lancs & Ches.1968. and J.B.Hartley: "Maps for the Local Historian." Amat.Hist. 7 nos.8/9.

comparatively small scale means that they are unable to supply really detailed information on the contemporary landscape and settlement morphology but at the same time they are valuable in that they give an accurate picture of population and settlement patterns at a uniform scale. Estate plans on the other hand are nearly always available at a large scale and in manuscript form. Unfortunately, those which survive for Rossendale[16] cover very small areas and are thus of limited value. Tithe maps were produced following the Tithe Commutation Act of 1836 and have been a major documentary source for settlement study of the early 19th century. Although Tithe maps are available for 79 percent of townships in England they are not ubiquitous in the Highland Zone. In Rossendale for example, the tithe was commuted in all townships except Eccleshill, Cowpe/Lench/Newhallhey and part of Yate and Pickup Bank, long before 1836. Enclosure maps, however, are an important source of cartographic data for quite substantial areas of East Lancashire. Enclosure in Lancashire meant enclosure of the common waste and large scale plans survive for all of the common wastes enclosed towards the end of the 18th century. These plans are in manuscript form and can be directly compared with the first six inch Ordnance Survey maps (e.g. see figures 5.14 and 5.15) in the 1840's, revealing important information on colonization and landscape change in the period 1780-1850.

(ii) Analysis of Point Patterns in Geographical Distributions: there are two principal methods employed by geographers to quantify the morphometry of point patterns in two dimensional space:(a) nearest neighbour analysis (b) quadrat sampling.[17]

(a) Nearest Neighbour Analysis: this method is not used here and its discussion will therefore be brief. Nearest neighbour analysis

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16
DDX 400 Rothwell Estate Plans.
DDX 118 Woodcock Papers and Deeds.

17
Other less common methods include contiguity measures, sequence analysis and occupancy theory.

was first developed by plant ecologists to describe plant distributions.[18] The measure of spacing proposed by Clark and Evans is based on the degree to which the distribution departs from randomness. The value of the mean distance of an individual to its nearest neighbour is obtained by the formula:

$$\bar{r} = \frac{\Sigma r}{N}$$

where r is the distance between an individual and its nearest neighbour and N the number of individuals in the population.

The expected mean distance ($\bar{r}$) given a completely random distribution is 1. Under conditions of maximum aggregation $\bar{r} = 0$ since all individuals occupy the same locus. Under conditions of maximum spacing individuals will be distributed in an even hexagonal pattern and the resultant mean distance value will be 2.1491.[19]

In natural populations it is common to find many individuals related to each other in a reflexive manner i.e. they are closer to each other than to any other individual. This situation can yield a low mean distance value when the pattern is dispersed. Social and economic factors can often promote the development of a reflexive pattern and in a later paper Clark and Evans[20] showed that in a synthetically constructed population (random) of 1000 points, 602 had the relationship of nearest neighbour to each other. This difficulty can be overcome by extending the measurement of distance to include not only first, but second, third, fourth etc. nearest neighbours.[21] This method has the additional advantage that it is possible to detect larger scale heterogeneity than is possible by

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18 P.J.Clark and F.C.Evans: "Distance to Nearest Neighbour as a Measure of Spatial Relationships in Populations." Ecology 35 1954 pp 445-453.

19 Clark and Evans 1954 op.cit. p 447.

20 Clark and Evans: "Some Aspects of Spatial Pattern in Biological Populations." Science 121 1955 pp 397-398.

21 H.R.Thompson: "Distribution of Distance to Nth Neighbour in a Population of Randomly Distributed Individuals."Ecology 37 1956 pp 391-94

merely using distance to nearest neighbour. Variations on this technique have been employed by geographers in examining settlement patterns at a regional scale. The results have tended to prove that such patterns correspond most closely to random distributions and therefore cast considerable doubt on the models of uniform distribution such as those of Christaller, Isard and Losch. Nearest neighbour analysis has other problems relating to the delimiting of the study area and the drawing of boundaries. In the context of analysing the distribution of buildings in 18th and 19th century Rossendale and Haut Beaujolais the method was considered unsatisfactory on two counts: first the problem of measuring very small distances between buildings in nucleated settlements; and second because each nucleated settlement comprises a cluster of buildings which would inevitably result in an $\bar{r}$ value indicating a high degree of overall aggregation. On the whole the method is better adapted to fairly uniform patterns and is better applied at a scale where settlements can be represented by a single point in two-dimensional space.

(b) Quadrat Sampling: quadrat sampling, like nearest neighbour analysis is designed as a method of measuring the degree of departure from randomness in spatial populations. The technique has a number of defects and indeed these provided the stimulus to develop nearest neighbour analysis. Usually, a grid of quadrats is placed over the map being studied, the number of objects in each quadrat is counted, and a frequency distribution of the number of quadrats containing 0,1,2,3,.....n objects is constructed. It is then necessary to identify some mathematical function which provides the best summary description of the frequency array. Finally, the goodness of fit between the two distributions is tested using chi-squared. Greig-Smith,[22] a plant ecologist has described the method in detail and

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22 P.Greig-Smith: "Quantitative Plant Ecology." 1957 pp12-78 passim.

Harvey,[23] Dacey,[24] and Aldskogius[25] have all had some success in applying the technique to the analysis of settlement patterns.

If the individuals of the population are randomly distributed, then the distribution ought to be matched by the Poisson distribution.[26] However, before attempting to fit a specific function it is worth considering the variance: mean ratio. In the Poisson distribution the variance and the mean coincide, indicating a situation of randomness. If the ratio of variance to mean is less than 1, a regular distribution is indicated; if it is greater than 1 the distribution is said to be aggregated or 'contagious'. It has been found that contagious distributions in geography often fit the Negative Binomial distribution, though there are several other positively skewed distributions.[27] [28]

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23 D.W.Harvey: "Geographical Processes and the Analysis of Point Patterns." I.B.G. 40 1966 pp 81-95.
and Harvey: "Models of Spatial Pattern in Human Geography." in R.Chorley and P.Haggett eds.: "Models in Geography." 1969 pp 547-597.

24 M.F.Dacey: "An Empirical Study of the Areal Distribution of Houses in Puerto Rico." I.B.G. 45 1968 pp 51-69.

25 H.Aldskogius: "Modelling the Evolution of Settlement Patterns." 1969 Geografiska Regionstudier 6. University of Uppsala.

26 Formula for Poisson distribution:

$$P(X) = \frac{(\lambda)^X e^{\lambda}}{X!}$$

where X = individuals per quadrat.

$$\lambda = \frac{\Sigma fx}{\Sigma f}$$

f = number of quadrats with X individuals.

27 Other distributions include the Thomas Double Poisson, the Neyman Type A and the Polya-Aeppli.

28 Formula for Negative Binomial distribution:

$$P(X) = \frac{(r + x - 1)}{x!\ (r - 1)!}\ p^r\ (1 - p)^x$$

where p = variance: mean ratio.
r = mp/(1 - p).

The two parameters of the Negative Binomial are not easily derived. The formulae above are simplified and suggested in L.J.King: "Statistical Analysis in Geography." 1969 p 47.

The major defect of quadrat sampling is that the results are greatly affected by the choice of quadrat size. Quadrats which are excessively small will give few units containing more than one individual, and will thus generate a Poisson distribution regardless of the actual nature of the spatial pattern. The ideal size of quadrat is thought to be one which could contain the largest aggregation in the population. Harvey[29] emphasises that failure to fit a Poisson distribution is conclusive evidence of non-randomness but the reverse of this statement is not true. In spite of the serious problem of quadrat size this method has been used with varying degrees of success by other writers using similar data to that employed here e.g. Dacey analysing house patterns and Aldskogius's analysis of vacational house patterns in Dalarna, Sweden. This sort of material is more amenable to analysis by quadrat sampling rather than by nearest neighbour analysis which is the justification for its use in the following section over the latter technique.

(iii) Population Distribution: analysis of the distribution of population in Haut Beaujolais and Rossendale is based on figures 5.6 and 5.7 compiled from the Cadastre 1812-13 and Yates's map 1794 respectively. Both maps capture the distribution of population at the vital period before widespread economic change had begun to modify the areal patterns of the domestic textile industry in both regions. The technique of quadrat sampling was used to describe the spatial distribution of buildings and though the results obtained are by no means conclusive, the principal aim was to compare the two distributions using quadrats of the same scale.[30] For the area of Lancashire covered by figure 5.7 only rural settlements were

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29 Harvey op.cit. 1967 p 575.

30 Both figs. 5.6 and 5.7 are approximately the same scale - quadrat size is 1 cm^2.

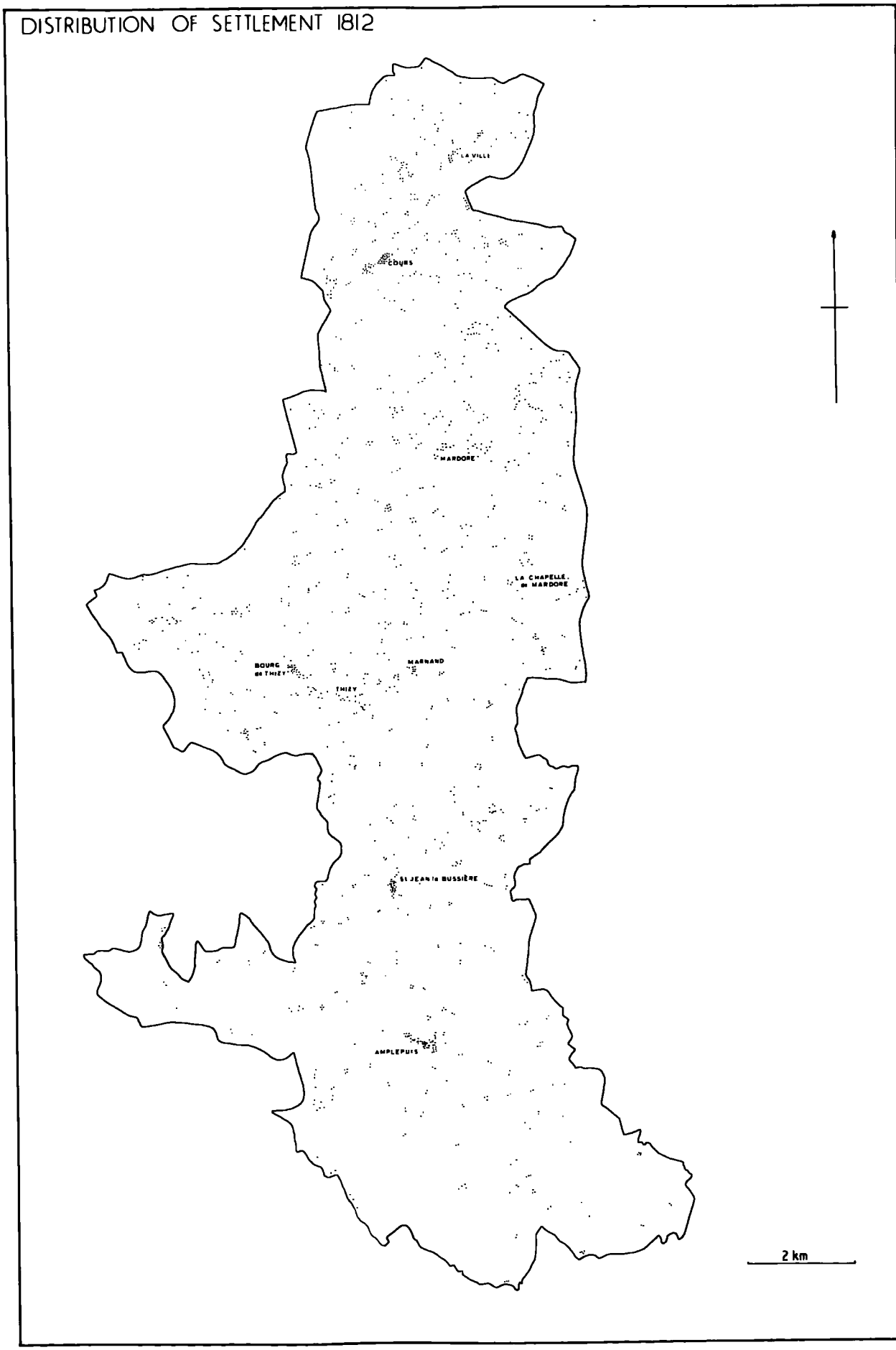
DISTRIBUTION OF SETTLEMENT 1812
LA VILLE
COURS
MARDORE
LA CHAPELLE de MARDORE
BOURG de THIZY
THIZY
MARNAND
ST JEAN la BUSSIÈRE
AMPLEPUIS
2 km

Figure 5.6

considered. Large agglomerations such as Haslingden, Blackburn and Over Darwen are not accurately portrayed on Yates's map in addition to which it is not possible to identify individual buildings. Urban settlements have therefore been ignored. In Haut Beaujolais in 1813 there were no urban agglomerations of comparable size, though large nucleated settlements were not uncommon. However, the cadastral maps at a scale of 1:2,500 are able to show these settlements in detail, and their measurement is not therefore a problem.

Quadrats containing 0 to 6 individuals (houses) were tabulated. Those containing 7 or more were very few in both regions and have not been included in the analysis (see below). The variance: mean ratio of the Rossendale data suggests a clear tendency towards aggregation of population and settlement. A random distribution is unlikely as the main feature of the Poisson curve is equality of variance and mean. Because of the nature of the distribution two negatively skewed distributions were fitted - the Negative Binomial and the Polya-Aeppli. The chi-squared value of the former was 47.53 with six degrees of freedom indicating a .001 percentage probability that such differences occurred by chance. The closeness of fit was evaluated using the percentage standard deviation (28.08). The fit is only approximate but far closer than the more negatively skewed

	Rossendale 1794			Haut Beaujolais 1813	
X	f	Neg.Bin.	Pol-Aep.	X	f
0	526	453	648	0	51
1	160	234	231	1	20
2	95	126	18	2	36
3	75	68	10	3	32
4	41	39	4	4	27
5	26	22	2	5	24
6	22	9	-	6	17
mean = 1.22		variance = 2.68		mean = 4.02	variance = 2.86

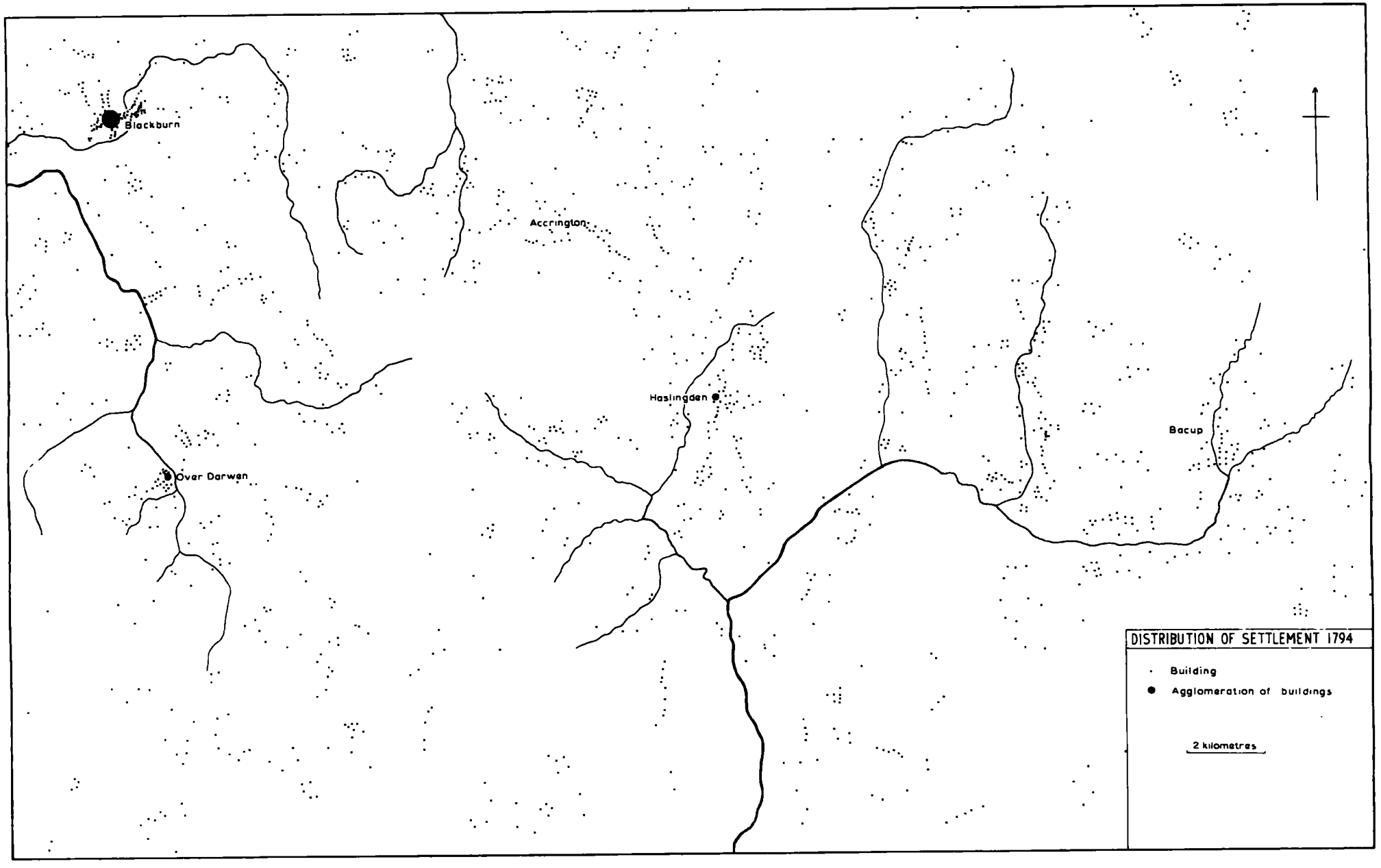
Blackburn
Accrington
Haslingden
Bacup
Over Darwen
DISTRIBUTION OF SETTLEMENT 1794
Building
Agglomeration of buildings
2 kilometres

Figure 5.7

Polya-Aeppli which gave a percentage standard deviation of 422.1. The distribution therefore approximates to the Negative Binomial as Dacey found in his analysis of house patterns in Puerto-Rico.[31]

The mean and variance parameters of Haut Beaujolais indicate a regular distribution with a ratio of less than one, and values clustering around the mean. This situation of 'under-dispersion' is not often encountered in geographical distributions, in spite of the strong theoretical basis for such patterns in the models of Christaller, Isard etc. However, the uniformity of this distribution could be misleading because of the greater accuracy of the larger scale cadastral survey compared with Yates's map.[32] The effect of using a more detailed map would be to increase the number of quadrats with one or more individuals and concomitantly reduce the number of blanks, thus raising the mean value. Yet, despite this proviso, scrutiny of figures 5.6 and 5.7 by 'eyeball' methods does suggest that population was more evenly distributed in Haut Beaujolais than in Rossendale.

The clustering of population and settlement in Rossendale in the late 18th century can be explained through three factors:

(1) the attractiveness of the sheltered river valleys - a factor that was being reinforced at this period by the incipient development of water-powered spinning machinery.

(2) the unattractiveness of extensive plateaux surfaces with high rainfall, blanket peat and extreme exposure.

(3) the fact that large areas of the plateaux were, or until recently had been, common land, without settlement. Enclosure only began to take place in the last 30 years of the century and at the time

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31 Dacey ibid.

32 The original maps are of different scale but have been reduced to approximately the same scale to facilitate quadrat sampling.

of Yates's survey colonization of these areas had barely got underway.

The sudden changes in relief from the steep slopes of the narrow valleys to the bleak plateaux surfaces have exerted an appreciable influence on settlement and population patterns in Rossendale, and contrast sharply with the gentler valley slopes and ridges of Haut Beaujolais. This pattern of relief offers greater potential for human occupance and in large part is responsible for the more even distribution of population and settlement in Haut Beaujolais. Even the high ridges offer scope for settlement, and the contrast between the attractiveness of the valleys and the uplands was less pronounced than in Rossendale. Exceptions to this uniformity of distribution include the nucleated settlements of the 'bourgs' which dominate the settlement hierarchy of each commune, and the higher, more exposed areas of upland to the south towards the Col des Sauvages which repelled settlement.

In Rossendale it is interesting to ask what, in spatial terms, the rapid rise of population from 1720 onwards in certain rural-industrial parishes, signified. There are no maps for the early 18th century to help us in this respect though it is possible to reconstruct the past spatial pattern from place of dwelling data which accompanies each record of baptism, burial and marriage in the parish registers. It was on this basis that figures 5.8a, 5.8b and 5.9c were constructed, using data from the Haslingden parish registers 1683-93 and 1770-74, and from Newchurch-in-Rossendale 1696-1722. The cartographic technique for the construction of the resultant isoline maps is described in Cole and King.[33] In the late 17th and early 18th centuries therefore, it appears that population was most dense in the

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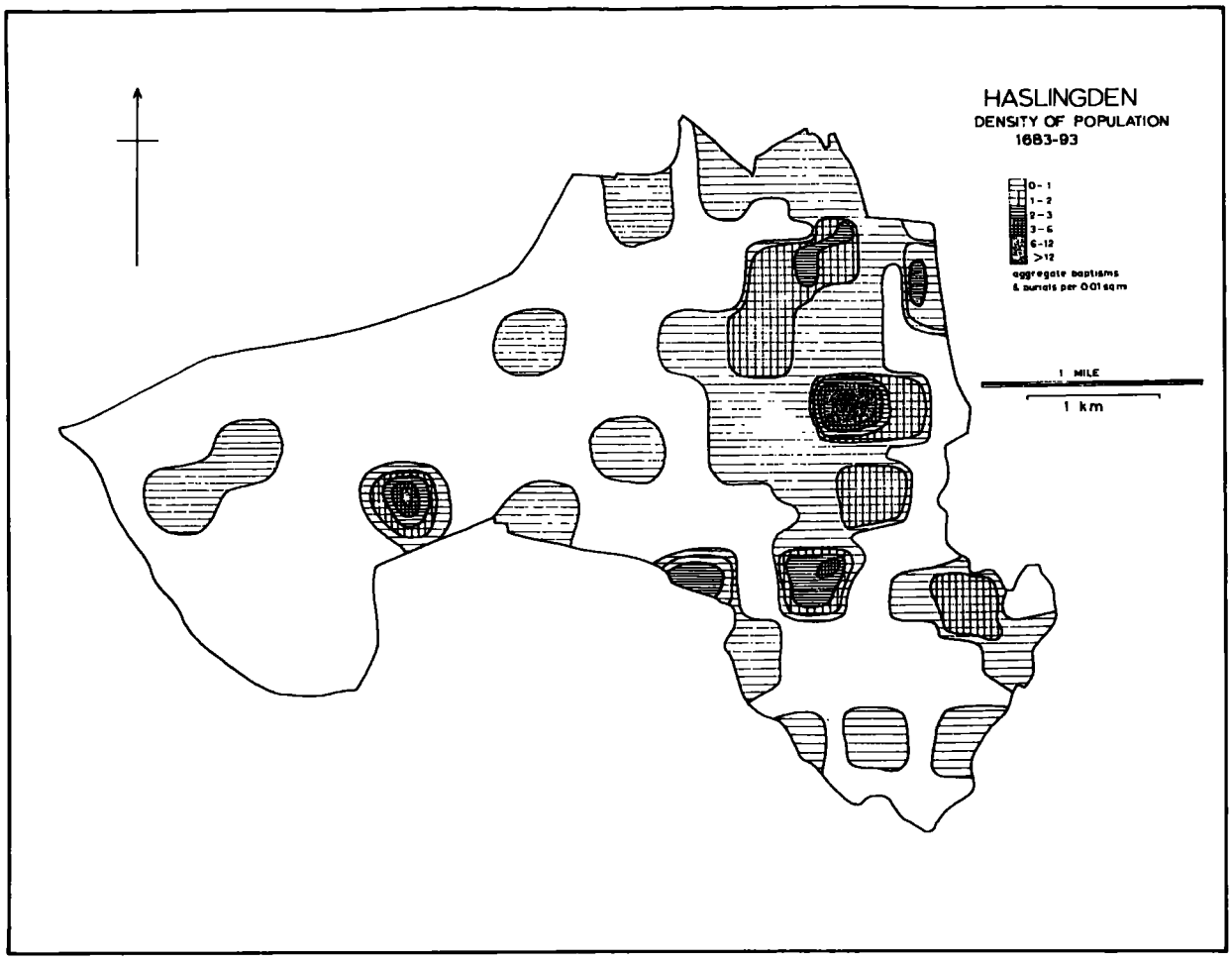
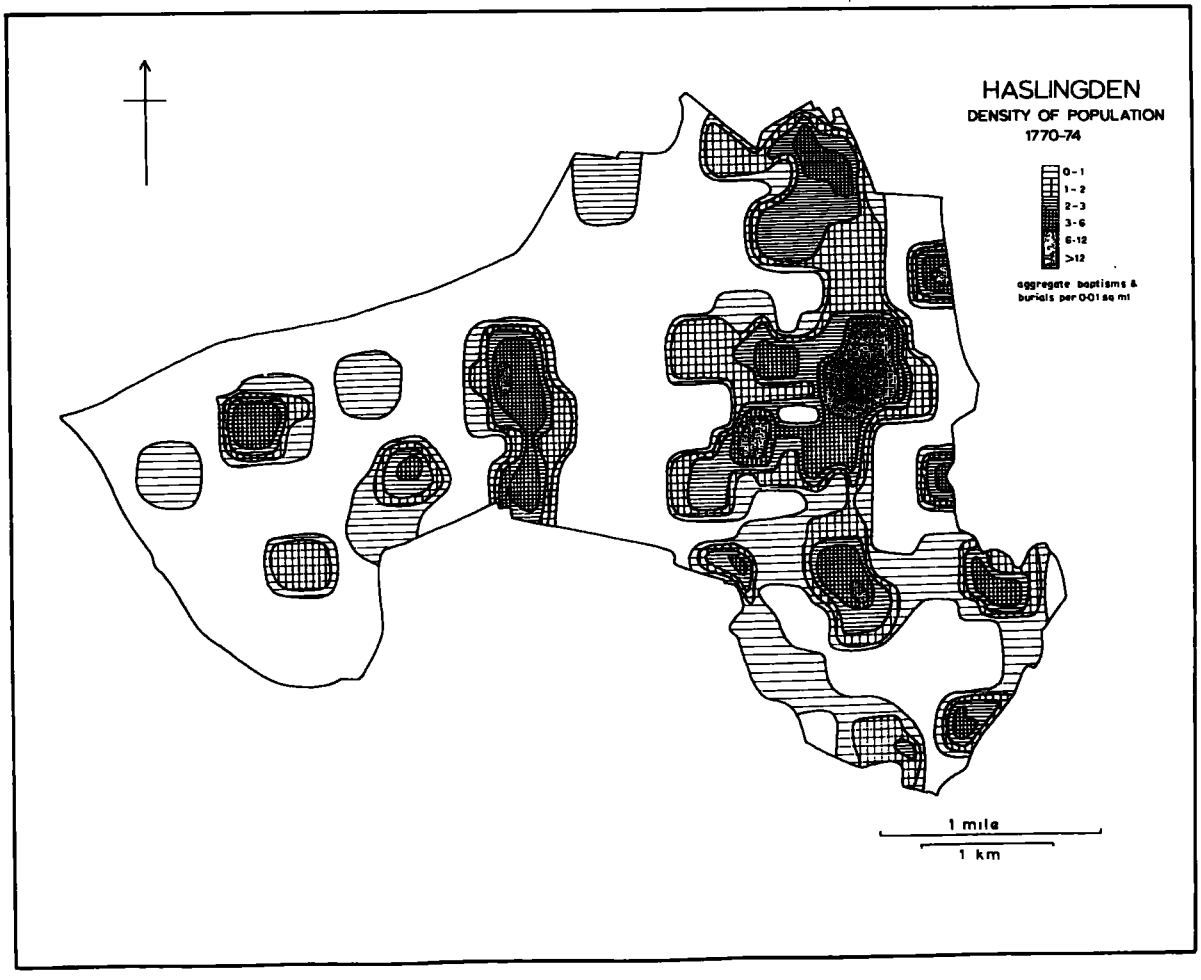
[33] J.Cole and C.King: "Quantitative Geography." 1968 (see appendix).


HASLINGDEN
DENSITY OF POPULATION
1683-93
0-1
1-2
2-3
3-6
6-12
>12
aggregate baptisms
& burials per 0·01 sq m
1 MILE
1 km

A


HASLINGDEN
DENSITY OF POPULATION
1770-74
0-1
1-2
2-3
3-6
6-12
>12
aggregate baptisms &
burials per 0·01 sq mi
1 mile
1 km

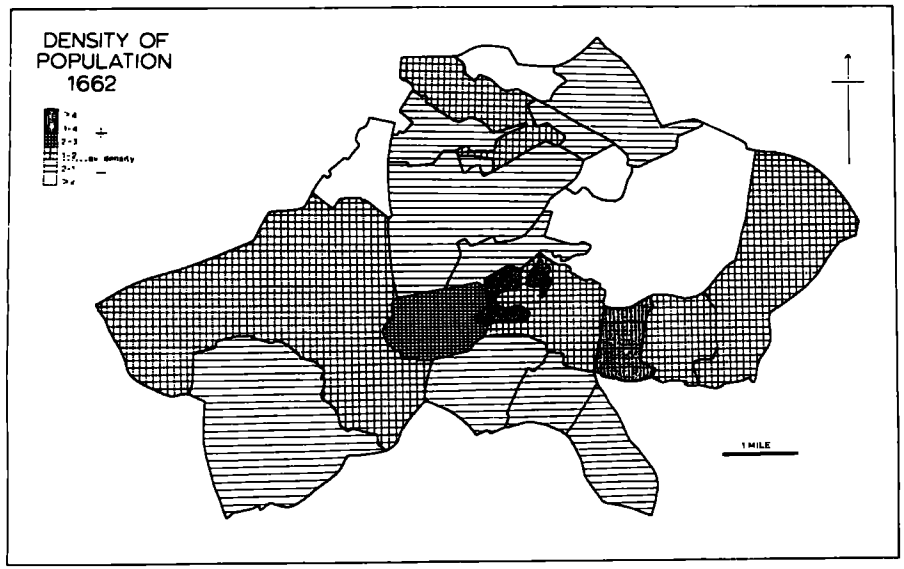
B

Figure 5.8

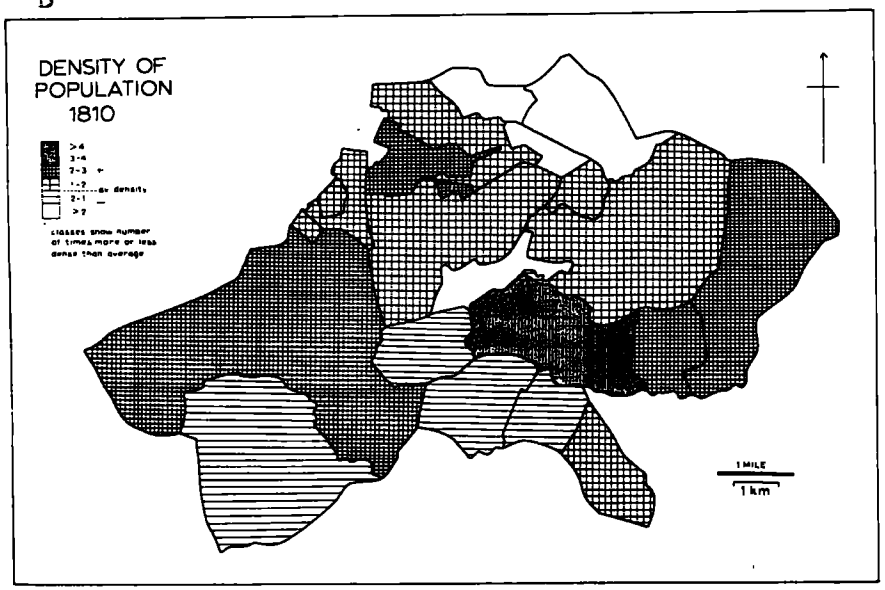
major river valleys that dissect the Rossendale Massif i.e. the Irwell, Whitewell Brook, Limey Water, Swinnel Brook, Holden Brook. Away from the valleys settlement was sparse and there was little attempt to colonize the plateaux surfaces. The principal agglomerations of population clearly stand out as Haslingden, Flaxmoss, Bacup, Rawtenstall and Newchurch-in-Rossendale. A century later this pattern shows little change. All populous areas have increased noticeably in density, but the distributional pattern remains focussed on the valleys with few inroads made into the upland areas. In the opinion of the writer it seems unlikely that the 18th century rise of population in the spinning and weaving parishes of Lancashire produced any fundamental changes in patterns of population distribution established prior to this period. The increases of population were most probably accommodated by the expansion of existing settlements rather than by the colonization of previously unoccupied or sparsely peopled areas. A comparison with Beaujolais in this respect is not possible because place of residence in the French registers refers only to the name of the commune/parish, and not to settlements within these units.

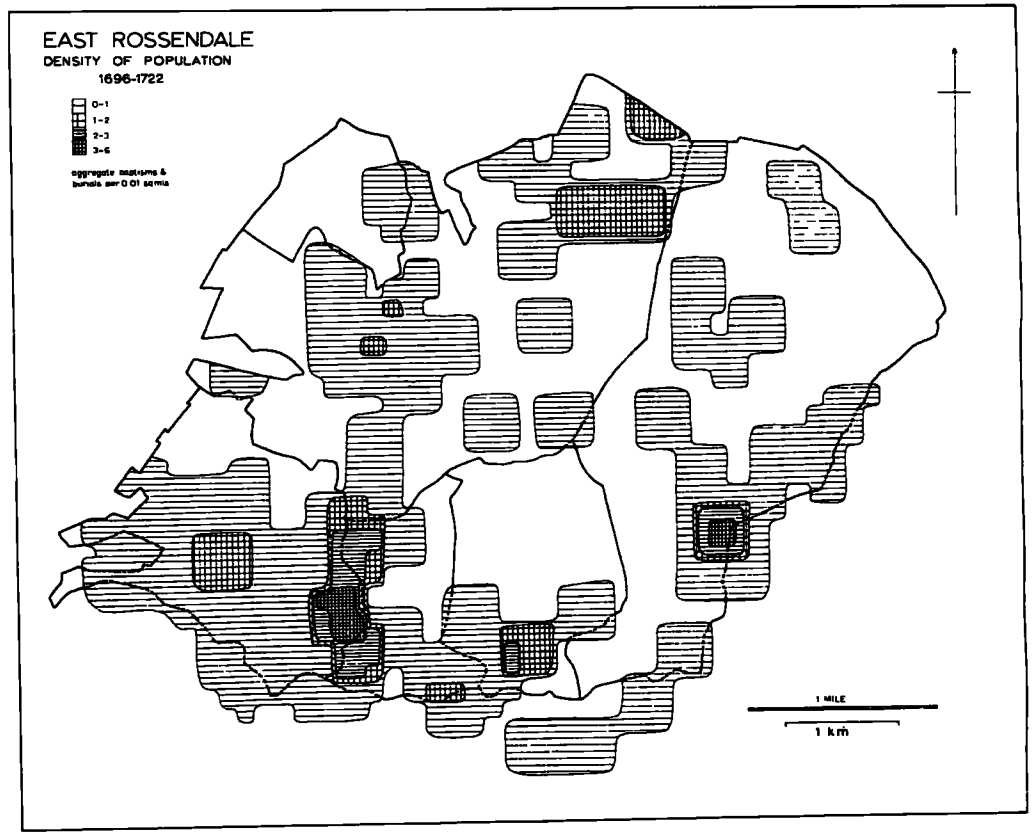
(iv) Rural Settlement: settlement can be considered as the morphological expression of population distribution over space. Settlement study is often pursued at a local scale, detailed fieldwork producing elaborate systems of classification based on morphology which can usually point to differences in the origins of settlement types. Studies of this type usually involve a minimum of generalization and little information is lost compared with other analyses of population distribution in space, such as population density. No detailed system of settlement classification in Rossendale and Haut Beaujolais is attempted here: settlement is simply viewed as one of the effects of population change on the contemporary landscape and settlement form

A



B





C

Figure 5.9

is considered of less importance than the concept of cluster or dispersion of population in space. Precise measurement of nucleation or settlement size is not possible before the censuses of 1851 in England and France. The discussion that follows tends therefore to be qualitative rather than quantitative. Moreover it must be added that 18th century documents relating to the process of house building (and thus the real development of settlement) are rarely encountered in the archives, severely handicapping any attempt to discuss the origins of settlement.

Settlement patterns are the result of the interplay of a large number of factors which for convenience can be considered as: environmental viz. water supply, soils, relief etc; socio-economic viz. inheritance patterns, farming systems, political systems, cultural practices etc. The settlement patterns of Rossendale and Haut Beaujolais are not dissimilar. Both patterns are characterized by a marked dispersion of settlement in which the principal elements are the isolated farmstead and the hamlet. Nucleation of the rural pattern has never been particularly pronounced in either region; indeed in Rossendale, the village, some common in Eastern England and the Midlands, is virtually unknown. In Haut Beaujolais the village finds expression in the 'bourg', the chief settlement of each commune.

Hudson[34] has recently produced a spatial model of settlement change through time to describe the evolution of settlement in six Iowa counties for the period 1870-1960. Drawing upon analogous processes in ecology, he recognises three stages in the development of the farm pattern in this part of the United States. First, colonization, when the cultivated area is being extended and population density is constant. Second, the spread of settlement, when the limit of the

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34 J.C.Hudson: "A Location Theory for Rural Settlement." AAAG 59 1968 pp 365-381.

colonized area had been defined, and density begins to increase. Finally, competition, as the larger units absorb the smaller and densities fall. Hudson found that the spatial patterns of the first process fitted the Negative Binomial distribution best, indicating a degree of agglomeration. This process became more marked in the second stage, until in the third stage, with the disappearance of settlements, the distribution became more regular and matched the Poisson distribution. In Rossendale and Haut Beaujolais in the early censal period we are concerned only with the first two stages of colonization and spread - the decline and decay of rural settlement not taking place until the industrial revolution was well advanced in both regions.

The process of colonization was presumably accomplished by people whose economy was agriculturally orientated. This being so, we can assume that the oldest elements in the settlement pattern are represented by farm buildings. In Beaujolais, isolation of farm units is only possible through exhaustive fieldwork, whereas in Rossendale there is documentary material which makes it possible to distinguish farm units from the remainder of the pattern.[35] Using the rate book of 1798 for the township of Haslingden the distribution of farms at that date can be reconstructed with the help of place names from the first edition of the six inch Ordnance Survey map. This distribution was then analysed using techniques outlined in section 5.3(ii). The average number of individuals per quadrat was 0.35, and the variance 0.45. The coincidence of variance and mean suggests a random distribution, not normally a feature of settlement patterns. In Rossendale, the absence of marked clustering in the farm pattern at this date can possibly be explained thus: (a) the area was never feudalized

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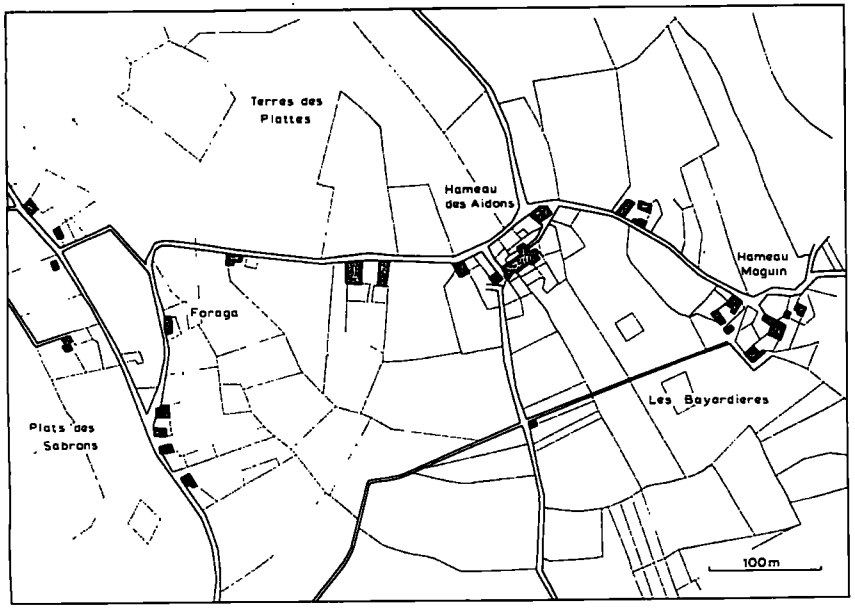
35 Survey of the Lands in Higher Booths 1791 (in Rawtenstall Pub.Library). Haslingden Rate Book 1798 P.R. 898. (L.R.O).

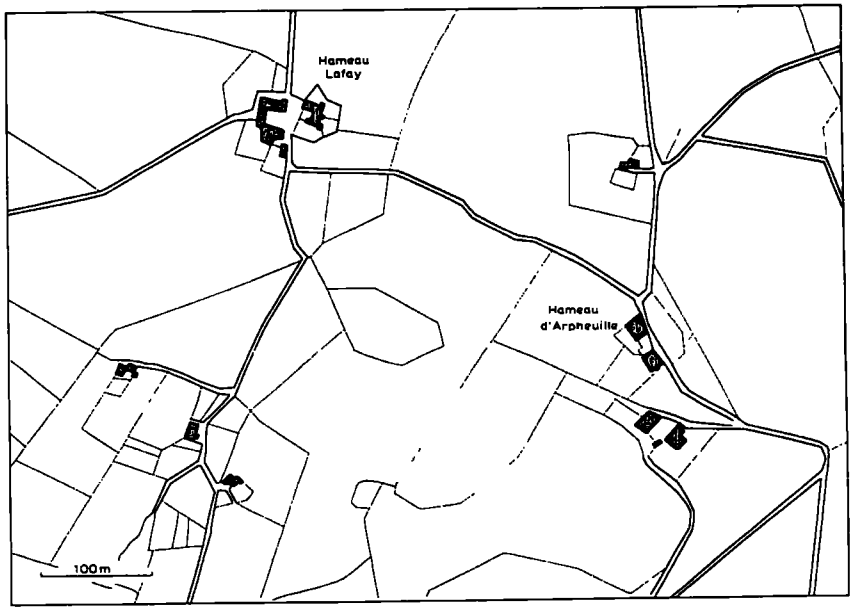
and common field agriculture which elsewhere produced nucleated settlement was practically unknown. Land was held in severalty, with copyholders enjoying the status of freemen. (b) the economy was originally based on livestock husbandry and extensive grazing. Large areas were required to support each individual farm unit and it was thus logistically important that farms were sited centrally in relation to their own land. The initial colonizing movement appears therefore to have been towards diffusion and the dispersion of settlement.

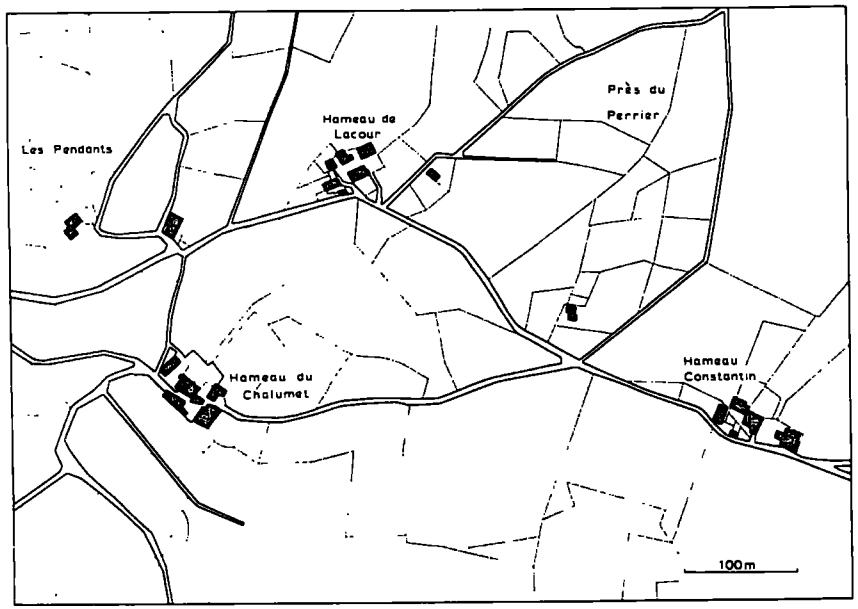
Let us now turn to consider the three main elements in the rural settlement patterns of Rossendale and Haut Beaujolais in the early 19th century (figures 5.5a, 5.10/11/12/13.).

(1) Isolated Farmsteads: this type of settlement is widely dispersed on the ridges and plateaux of both regions and probably represents one of the oldest elements in the settlement hierarchy. However, in Rossendale it is best developed on land that was enclosed towards the end of the 18th century and which had formerly been common waste.

(2) Hamlets: this is the most interesting type of settlement and the one which is most common in both regions and probably in all regions where rural industry played a key role in the local economy. The hamlets usually comprise two or three farms and several associated cottages forming a compact morphological cluster. It seems likely that the farms formed the original nucleus of the settlement around which has developed later accretions of cottages and outbuildings. The names of these settlements suggest they were associated with particular families e.g. Eccles Fold, Sharrock Fold, Banks Fold, Hameau Constantin, Hameau Lafay, Hameau Maguin etc. It is possible that the development of this distinctive settlement type is associated with the 18th century rise of population in rural-industrial communities and the absorbtion of the surplus population of natural increase in these settlements by the willingness of landowners (i.e.cultivators)







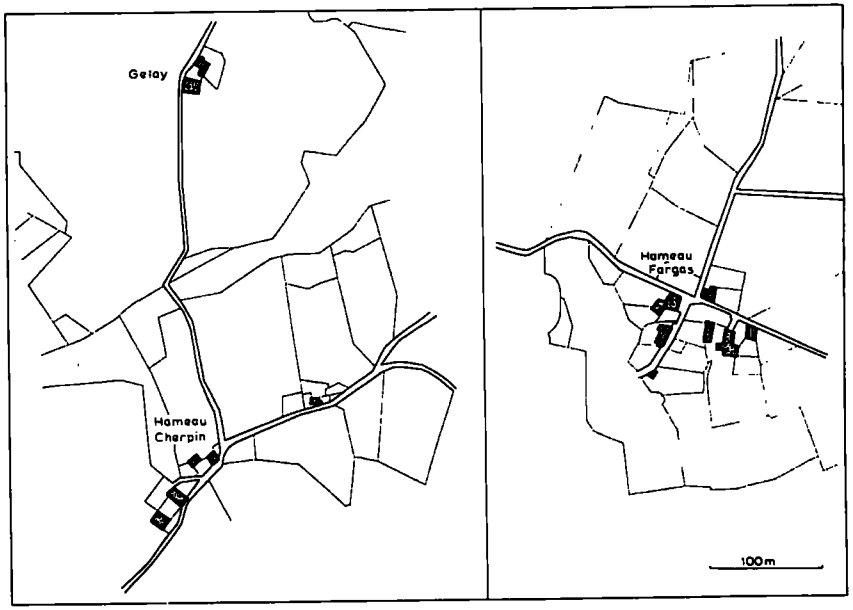
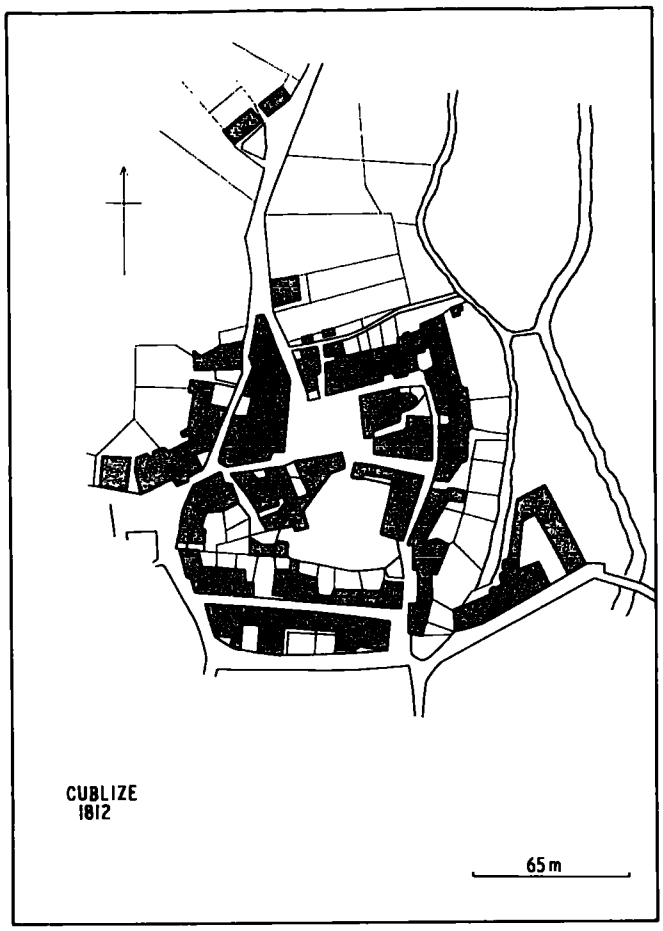
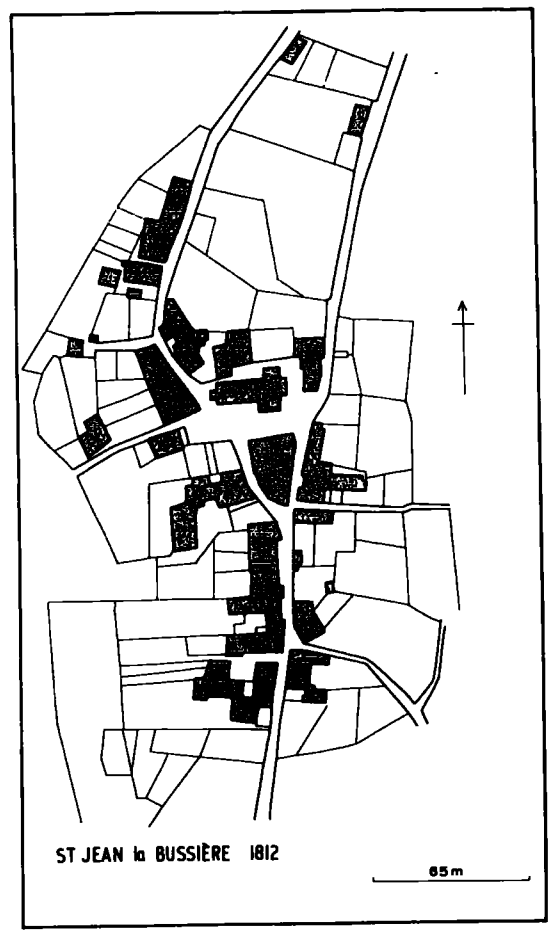
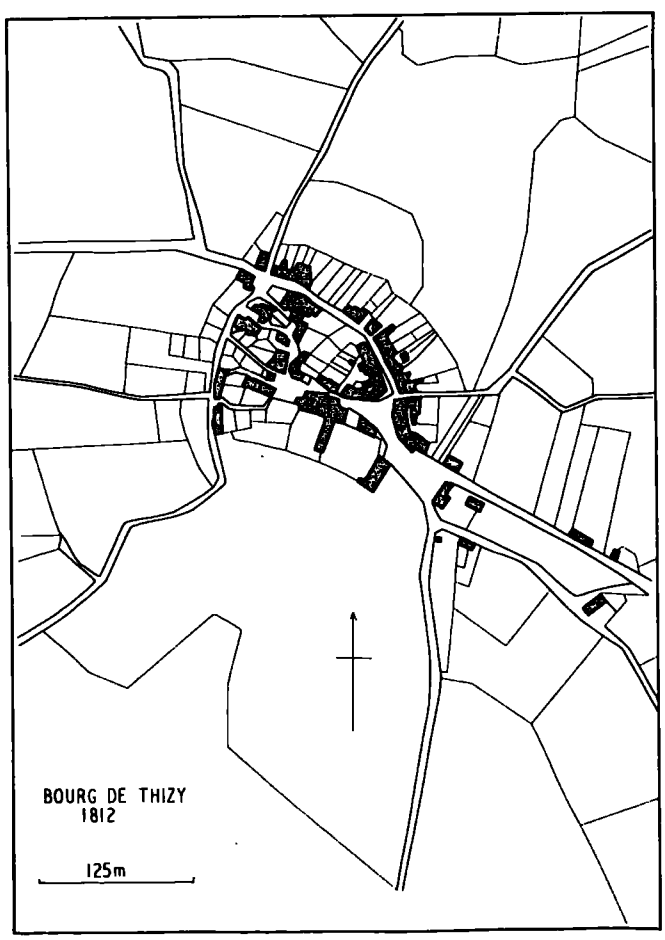


Fig.5.10 Rural Settlement: Haut Beaujolais 1812.







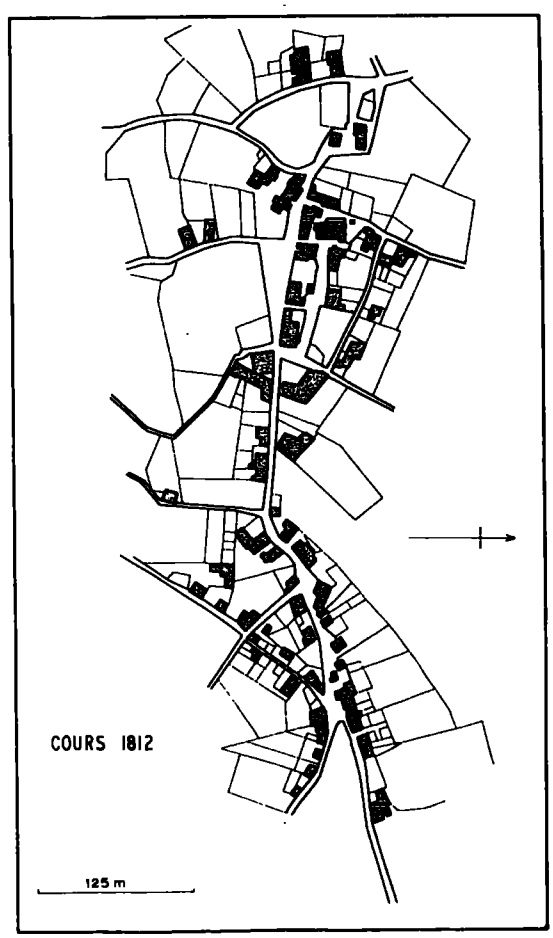


Fig.5.11 Village Settlement: Haut Beaujolais 1812.

to release land for the building of cottages to accommodate their offspring. These cottages would tend to cluster around the home farm producing a distinctive nucleation in the landscape. The retention of offspring would have been facilitated by the practice of partible inheritance and more important by the availability of employment in the domestic textile industry. An industry attracted to point locations would not have given rise to such a pattern, but the domestic textile industry was accommodated in the countryside in existing settlements and demanded only the power of the hand-operated loom and spinning wheel. Table 5.4 shows the duality of function in a selection of hamlets in Haut Beaujolais (figure 5.9) indicated by employment structure in 1851.

Table 5.4 Employment Structure 1851.

	Textiles	Agriculture	Servants
H. Lafay	15	2	2
H. Fargas	10	3	1
H. Maguin	10	2	1
H. Constantin	6	2	1
H. Chamulet	3	3	3
H. Lacour	10	3	0
H. Cherpin	6	3	2
H. Perrier	19	8	3
H. Arpheuille	2	2	1

Settlements which originally were agriculturally orientated were by 1851 deeply engaged in rural industry, though still preserving a duality of function. Evidence relating to the origins and subsequent growth of such settlements is extremely sparse. However, a brief insight into a process that might well have been widespread is available for Rossendale in the form of a newspaper article published in the'Blackburn Times' in 1932.[36] A series of articles concerning the life of Thomas Eccles, one of the first entrepreneurs of the industrial revolution in the region, tell us that he was born at Mill Barn (Yate and Pickup Bank) in 1743 in a house built by his father

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36 'The Blackburn Times.' 21.5.1932; 30.7.1932; 6.8.1972. Deposited in Blackburn Public Library.

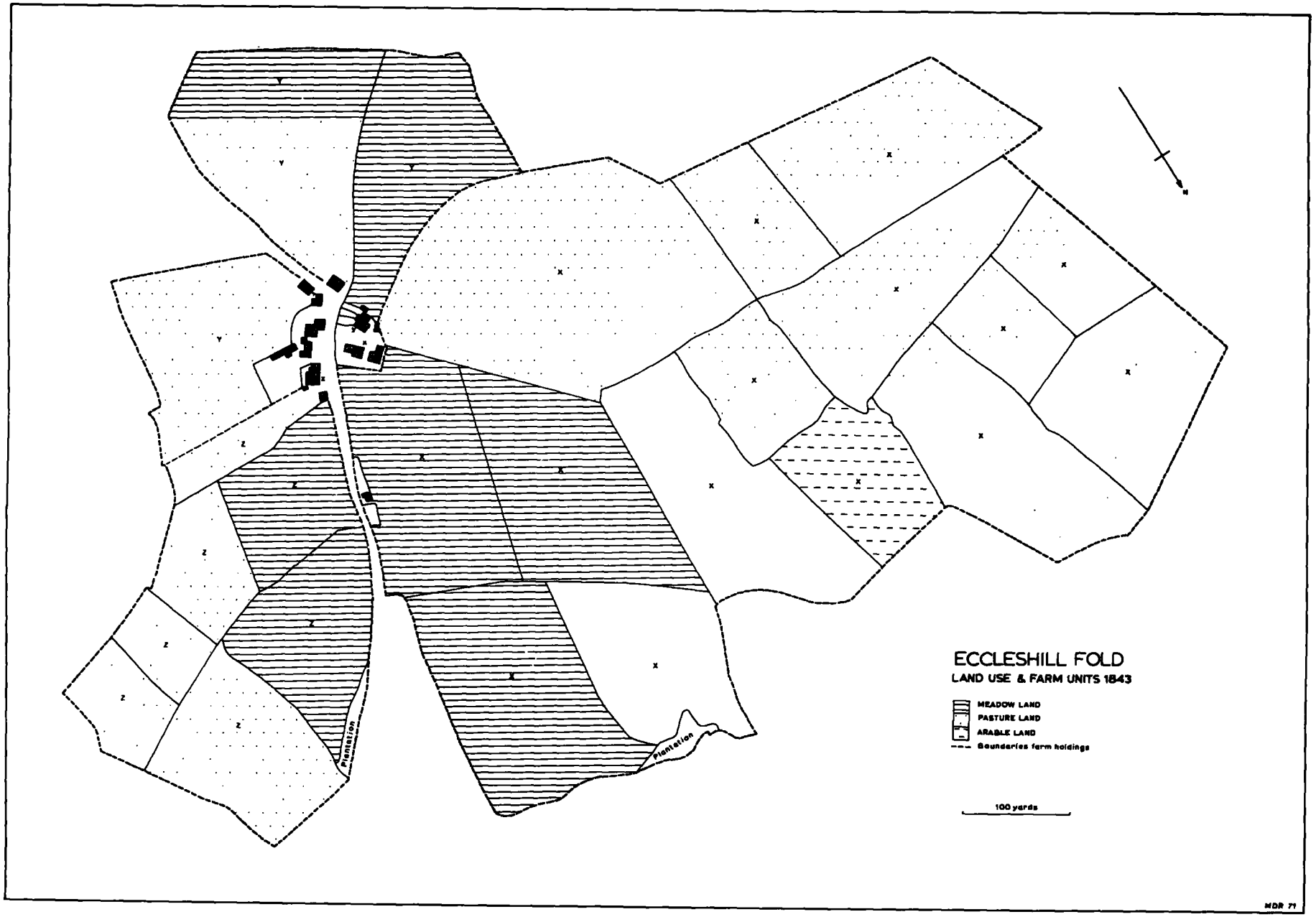
ECCLESHILL FOLD
LAND USE & FARM UNITS 1843
MEADOW LAND
PASTURE LAND
ARABLE LAND
Boundaries farm holdings
100 yards
Plantation
Plantation
MDR 71

Figure 5.12

The older branches of the Eccles family held Eccles Fold, formerly belonging to the Holden family who built it in 1601 and named it Holden Fold. Other members of the family lived at Sharrock Fold, being allied to the Sharrocks through marriage. Thomas Eccles was brought up at Mill Barn as a handloom weaver. The above account shows how house building tended to be the concern of the private individual and how individual hamlets were associated with single families.

It seems likely that the pattern of hamlets and small nucleations in Rossendale and Haut Beaujolais reflects the pattern of initial colonization of the uplands by farming communities. The nucleus of each hamlet was the home farm, which through the natural growth of population over a period of two centuries or more attracted accretions of cottages occupied by spinners and weavers. The inference that the overall distributional pattern of population and settlement showed little change during the 18th century is to some extent confirmed for Rossendale by the maps of population distribution of the township of Haslingden (figures 5.8a and 5.8b). As was seen in the previous section, the distribution of population broke no new ground in this township in the course of the 18th century.

(3) Villages: this type of settlement is absent in 18th century Rossendale but is represented in Haut Beaujolais by the 'bourg', the major settlement of each commune. Discussion of the changing status of the 'bourg' in relation to more dispersed types of rural settlement is only possible with the definition of agglomerated and dispersed populations in the 1851 and subsequent censuses. The 'bourg' probably represents the earliest settlement in the commune. It contains the parish church, the 'mairie' and other important central place functions. In size, and in terms of its functions, the 'bourg' can vary from a small town such as Thizy to a large hamlet such as La Chapelle de

Mardore. The name of the commune and parish is usually taken from the name of the 'bourg'. There is no consistency in the morphological pattern of the 'bourgs' (figure 5.8) which vary from loose, linear agglomerations, as at Cours, to compact, tightly knit forms focussed around the parish church as at Bourg de Thizy and Cublize. The site of the twin settlements of Thizy and Bourg de Thizy on a spur, elevated above the Trambouze valley, has been occupied at least since Roman times. The original Roman garrison was replaced by a castle built by the Sires of Beaujeu in the 11 th century. In 1150 Thizy was granted a charter which made it the only 'ville franche' for a radius of 50 kilometres, and greatly stimulated its development as a market.[37] It is not known to what degree the 'bourgs' were organized under a feudal regime in the Middle Ages, but on the eve of the Revolution the seigneurs owned the largest farms and the majority of peasants possessed little more than the small parcels of land that surrounded their cottages.[38] The sites of the 'bourgs' (other than those obviously chosen for strategic reasons) suggests locations in relation to the best arable land. Most 'bourgs' are sited either in or close to the main river valleys where alluvial and glacial soils were available for tillage, in contrast to thin, heavily leached soils which characterized the ridges. If the first colonists settled the valleys under the influence of the seigneurs, then a system of common agriculture based on arable farming, and using the extensive uplands as pasture and common grazing lands seems probable. This would imply that settlement of the upland proper and the appearance of isolated farms there, only came later, with some relaxation of feudal control.

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37 Houssel op.cit. p 131.

38 Houssel op.cit. p 134.

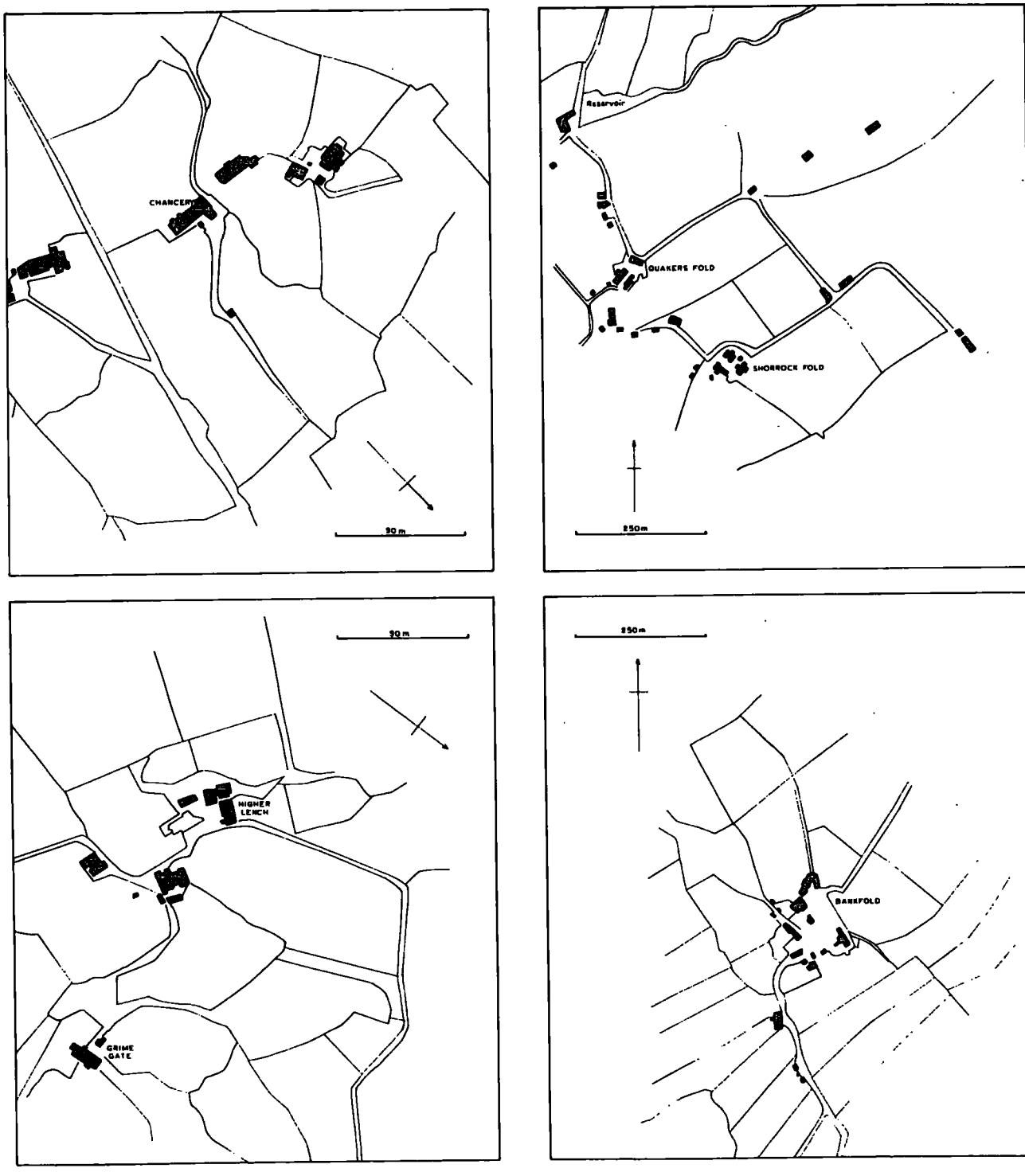

Fig.5.13 Rural Settlement: Rossendale c1840.

(5.4) Enclosure of the Waste in Lancashire: an important development in settlement change in Rossendale was the enclosure of large tracts of moorland in the Blackburn area and the Ribble Valley after 1770.[39] Enclosure took place with a view to draining and improving land which "from generation to generation had remained underdeveloped and often enormously overstocked."[40] Moreover, with the general rise of population in 18th century East Lancashire, the pressure on the commonlands increased and deterioration became more apparent. With enclosure, each commoner was alotted a part of the common proportionate to his interest. But in practice, only the rights of the Lord of the Manor and the freehold commoners were respected. In consequence many small farmers who previously had just eked out an existence by virtue of their extensive grazing rights on the commons, now found their holdings too small to be viable. In addition the cottager lost his free firing, his geese and poultry run and his right to collect furze and briars,[41] while squatters who previously had been given leave to build cottages on the waste, were evicted.

The impact of this change on the settlement patterns of the affected areas can be gauged from comparison of enclosure award plans and the six inch Ordnance Survey maps, which appeared 50 or 60 years later. Figures 5.14/15/16 illustrate these changes in the three townships of Edgeworth, Oswaldtwistle and Lower Darwen. What we are seeing at this period following enclosure is the colonization of land never previously settled. Before enclosure, small hamlets and isolated farms were dotted around the margins of the commons. After enclosure the commons were divided into a number of large fields

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39 Oswaldtwistle 1774; Little Harwood 1776; Lower Darwen 1779; Forton 1785; Clitheroe 1786; Billington and Wilpshire 1788; Wiswell 1789; Edgeworth 1794; Clayton-le-Moors 1794; Harwood 1797; Blackburn 1801; Ribchester 1808.

40 W.Harrison: "Commons Inclosures in Lancashire and Cheshire in the 18th century." Trans.Lancs & Ches Ant.Soc. VI 1888 p 113.

41 Ernle op.cit. p 306.


ENCLOSURE OF WASTE & COMMON LAND
MANOR OF OSWALDTWISTLE 1776
½ mile
SCALE

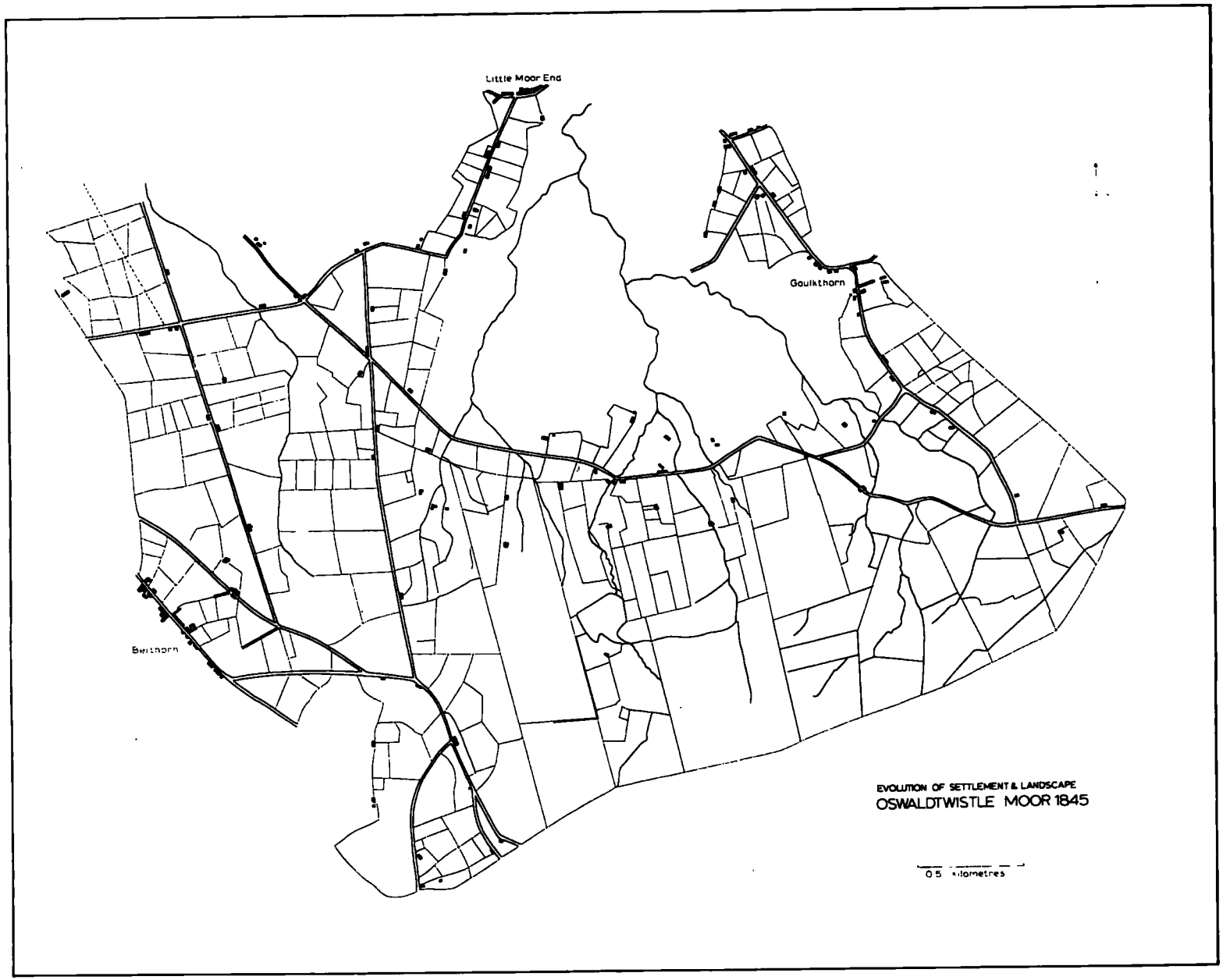
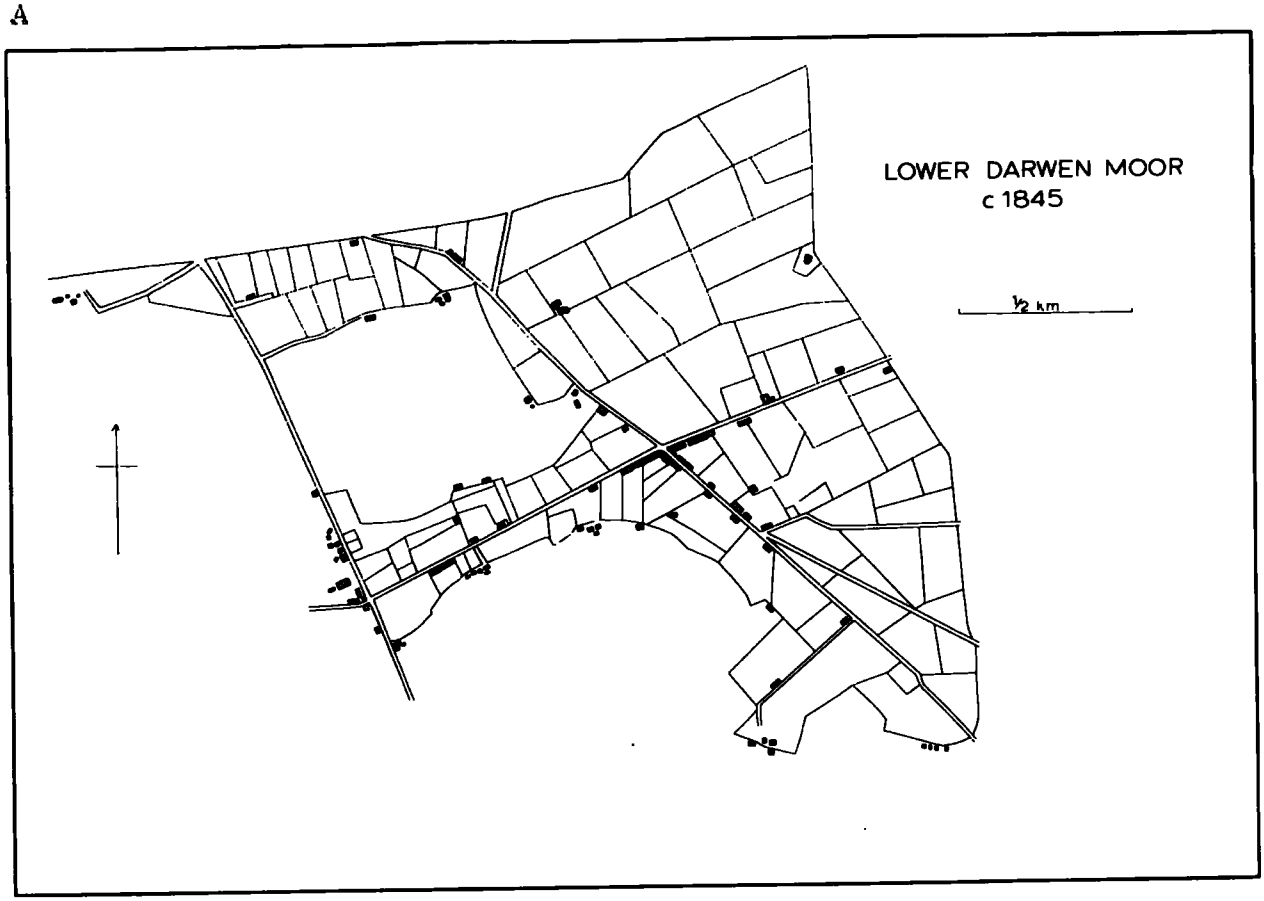

Little Moor End
Gaulkthorn
Belthorn
EVOLUTION OF SETTLEMENT & LANDSCAPE
OSWALDTWISTLE MOOR 1845
0 5 kilometres

Figure 5.15

A



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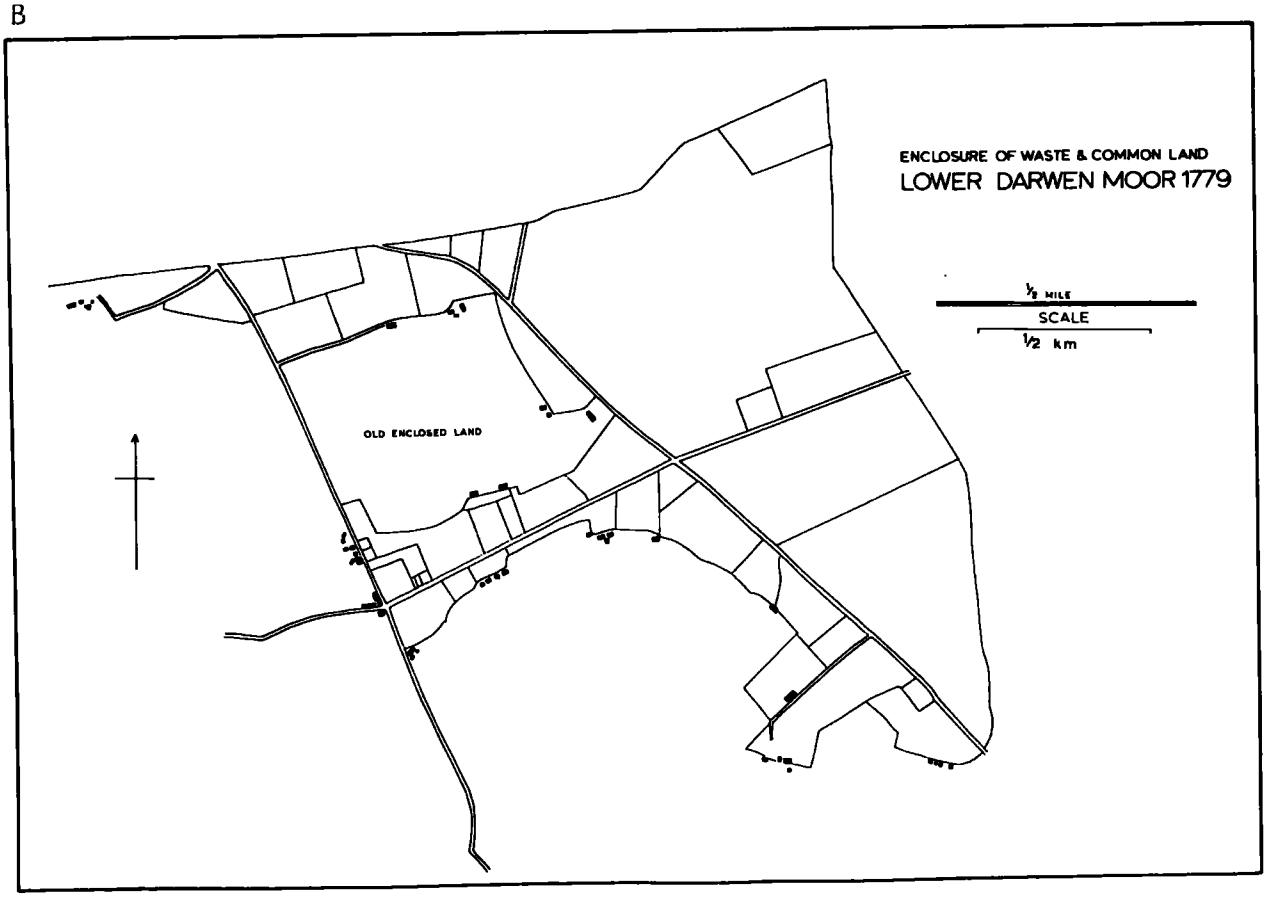

Figure 5.16

Figure 5.17

representing the new property boundaries, and were colonized by new settlement. These settlements were always isolated farmsteads. No new hamlets were created as a result of enclosure which suggests that this form of settlement developed some considerable time before the last two or three decades of the 18th century. Although argument by analogy is dangerous, we might tentatively suggest that the situation in those areas experiencing enclosure in the late 18th century was paralleled by the deforestation order of 1507, and the large scale colonization of the forest that ensued. We have argued that the first type of settlement to be established away from the main river valleys was the isolated farm, and that from this nucleus the farming-weaving hamlet developed. At the close of the 18th century we see the same process of colonization taking place on the newly enclosed commonlands of East Lancashire. Following partition and enclosure the moorland waste was limed and drained and brought into cultivation. A few oats were grown on the better land; some meadow was reclaimed; and the remainder left as rough, but improved pasture.[42]

(5.5) Conclusion: the settlement patterns of Rossendale and Haut Beaujolais can be considered in two phases. The first phase was the initial colonization of the two regions by agricultural settlement. The most common type of settlement associated with this phase was the isolated farmstead which can be seen as a response to the difficulties of the physical environment and an agricultural system in which extensive livestock husbandry predominated. In Rossendale this development was aided by the free status of the population and a probable system of inheritance based on some form of gavelkind. The situation in Beaujolais in this respect is unclear, though it is unlikely to have been similar to that in Rossendale.

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42 Bennett op.cit. p 92.

The second phase is concerned with the introduction of rural industry. In the face of limited agricultural potential, an increasing proportion of the population turned to this form of economic activity and were thus absorbed by the local economy and permitted to remain in situ. The actual mechanism by which the population was retained in this way is in fact more complicated, depending on legal and inheritance factors. The process of settlement evolution in the 18th century appears to have been as follows: isolated farmsteads, widely scattered in the uplands, providing the nucleus for the accretions of cottages built to accommodate the domestic spinners and weavers. This development seems to have been connected with individual families and the formation of extended family-like groups in discrete nucleations. Thus in those communes and townships that experienced rapid population growth under the stimulus of the domestic textile industry, we find towards the end of the pre-industrial period a dispersed pattern of settlement, characterized by a large number of small nucleations. The density of these settlements was considerable and indeed they could almost be regarded as pseudo-urban: in function they were predominantly industrial, in location rural. These hamlets of the uplands of Rossendale and Haut Beaujolais are the unique contribution of the domestic textile industry to the cultural landscapes of the two regions.

Before leaving the pre-industrial period some discussion of the origins of rural industry must be attempted. The final section of this chapter is therefore devoted to this topic, which draws together many of the themes touched upon in previous chapters.

(5.6) The Origins of Rural Industry: it does not fall within the scope of this work to discuss in detail the origins of rural industry, and indeed it is doubtful whether sufficient documentary material exists to make a definitive analysis of this kind. However, in recent years

economic historians and geographers have given some attention to the problem of the origins of industry in the countryside.[43] The most important idea to emerge from this work is the causative role of demographic factors in the genetic process. Increasing stress is placed upon the role of population as an independent variable as well as a dependent variable in any socio-economic system. The old Malthusian idea, later to be adopted by Darwin, that population levels were controlled by economic and environmental circumstances, is only partly true. Boserup[44] for example, has shown how population growth can act as a stimulus to economic change in primitive societies, forcing groups to innovate and progress to new agricultural systems. Wrigley[45 46] has also shown that in times of economic crisis, animal (and primate) populations need not necessarily accept the inevitable corollary of periodic high mortality: fertility it is argued, like mortality, is density dependent, and if animal populations are able to control their numbers in this way then it is not difficult to see human populations adopting the same response.

The main criticism of these ideas is that their proponents tend to adopt a highly deterministic stance in stressing the importance of population pressure in seeking a mono-causal explanation. Figure 5.18 is an attempt to show in schematic form the alternative courses of action open to any society where 'overpopulation' is a problem. 'Overpopulation' is, of course, a relative, not an absolute concept. Here it is used in the sense of declining per capita incomes

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43 J.Thirsk: "Industries in the Countryside." in "Essays in Tudor and Stuart England." ed. F.J.Fisher 1961 pp 70-88.

44 E.Boserup: "The Conditions of Agricultural Growth." 1965.

45 E.Wrigley: "Population and History." 1969 p 49.

46 E.Wrigley: "Demographic Models and Geography." in Chorley and Haggett 1967 op.cit. pp 191-194 passim.

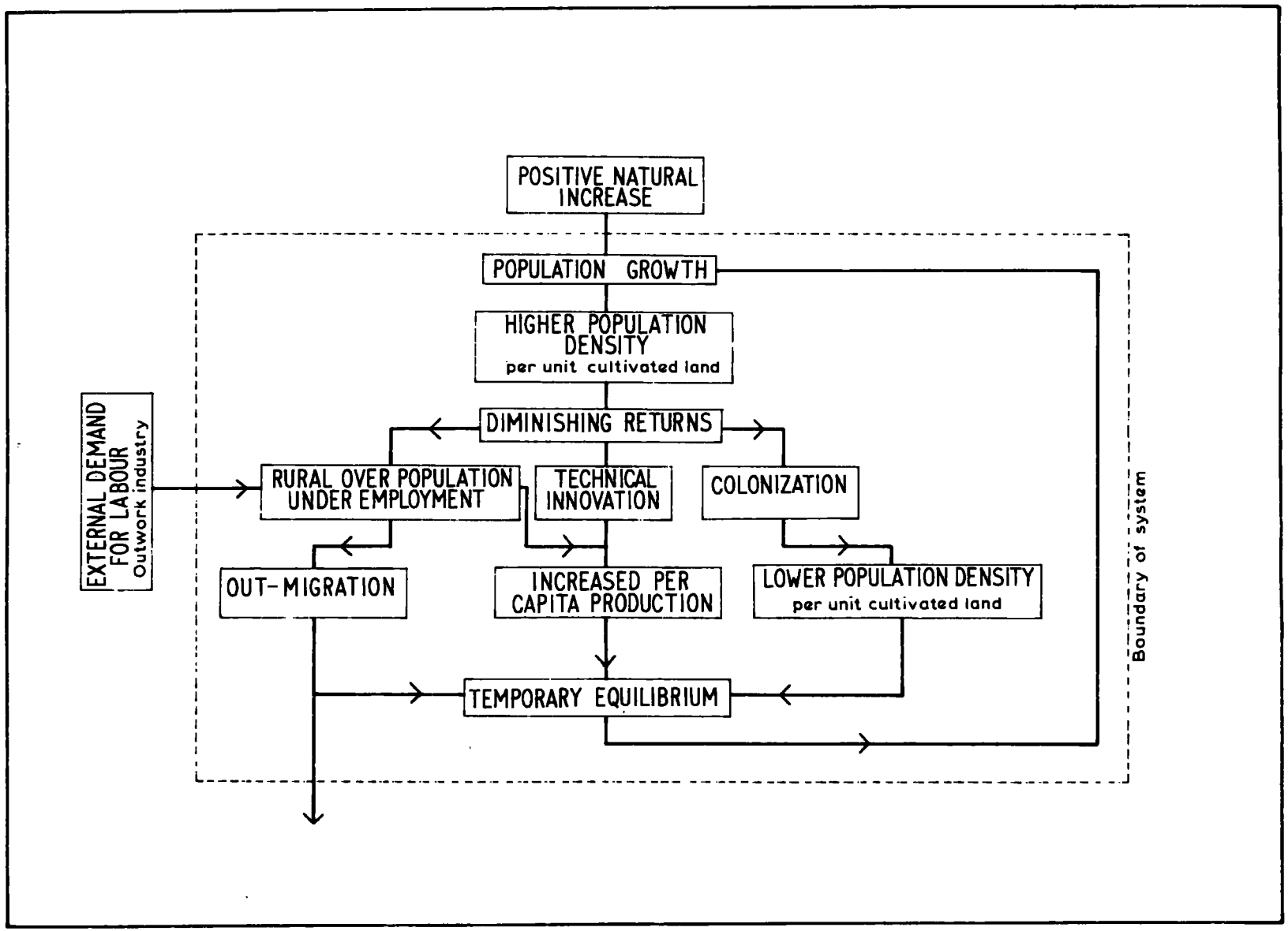

Fig. 5.18 Population Growth and Economic Change

and living standards owing to some change in either the demographic or the economic system of the society. This state of disequilibrium between population and resources can be brought about in a number of ways: population growth can outstrip the growth of the society's resources or else the wealth of the society can decline because of harvest failure or increased prices for certain staple commodities (especially grain). If we return to figure 5.18, we see a society facing a crisis of 'overpopulation' because population has grown faster than production. Agricultural underemployment is emphasised by the diminishing returns of agriculture relative to the labour input. Such a society has a number of possible choices of action, though the decision when taken, will most probably be an unconscious one. When population density per unit cultivated area reaches a critical point the first response is invariably to resort to the exploitation of hitherto uncultivated land.[47] This leads to the colonization of new areas (often the waste) using existing systems and techniques of farming. In this way total production of the group, and in consequence per capita incomes are increased. In the same way production can be increased by innovation and the introduction of new methods and techniques, thus increasing the intensity of agriculture and yields, on a constant area. On the other side of the equation per capita incomes can be increased by decreasing the size of the population. Fertility can be checked by primitive practices of birth control or else out-migration can take place to areas of better employment opportunity. All these responses are designed to avert the ultimate Malthusian check of high mortality, through famine and disease, and in the writer's opinion human populations will always attempt a positive solution to the problem of 'overpopulation', only succumbing

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47 B.H.Slicher Van Bath: "The Agrarian History of Western Europe A.D. 500-1850." 1963 p 61.

to the disaster of high mortality when all other efforts have failed. All the positive responses outlined above are generated from within the socio-economic system of the society, but figure 5.18 shows that another response - the introduction of new forms of employment into the system - can be generated externally. This response, which can be loosely classified with those of 'innovation' is the one we shall now consider, with special reference to rural industry and the domestic textile industry.

Joan Thirsk has made a detailed study of the hand-knitting industry of Dentdale and Garsdale established in the early 17th century and organized from Kendal. She explains the development of industry in these valleys in the rise of population in the 16th century which was facilitated by the practice of partible inheritance enabling the surplus population to remain in situ. The process of morcellation and sub-division of holdings eventually reached a stage where holdings were too small to be economically viable. This crisis was apparently solved by the introduction of hand-knitting into the local economy. However, the initial stimulus did not come from entrepreneurs or from the availability of local supplies of wool, but from the populations of Dentdale and Garsdale themselves, who "were compelled to seek some employment in addition to their farming."[48] Thus, the high densities found in these valleys in late 17th, and the 18th century were the direct result of the presence of rural industry.

A key problem with this sort of explanation is to discover the exact chronology of the introduction of industry into the agrarian economy. It can be argued that many areas in the Highland Zone of Britain (and Western Europe) possessed domestic textile industries as early as the 13th and 14th centuries as a natural response to the

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48 Thirsk op.cit. p 70.

difficulties of farming in such areas, high seasonal unemployment and the availability of wool. It is probable that domestic industry of this sort was widespread in Northern England at an early period (although rarely organized on a commercial basis) though it is difficult to assess its impact on population growth in mediaeval times. Nevertheless, we need not necessarily invoke a demographic or economic crisis to explain the development of rural industry in areas of limited agricultural potential. The industry might have been long established in any region in order to provide seasonal employment in times of slack in the agricultural calendar. What a crisis of this sort might do is to increase the dependence of the community on a type of employment already present in the region.

Rossendale was an area of late colonization, being part of the Royal Forest until the disafforestation order of 1507. The 16th century therefore was a period of rapid colonization and population growth. Initially the economy was based on extensive livestock husbandry on the moorlands, with some arable in the valleys. Manorialization was weak and the majority of the population were customary tenants and therefore virtually freemen. Rapid population growth during the 16th century might well have provoked an economic crisis by the early 17th century, with population expanding more vigorously than production. As far as is known, there were no significant improvements in agriculture at this time, and indeed the so-called agricultural revolution never made any impact on the region.[49] Further colonization of the barren plateaux would have been no answer, and it must be assumed that the size of holdings was already at the limit of what was economically viable. The eventual response was perhaps similar to that at Dentdale and Garsdale - the establishment on a

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49 Tupling op.cit.

commercial scale of a domestic woollen industry. But almost certainly the industry was already a part of the employment structure of the region and perhaps even contributed to the rapid population growth after 1507.

This explanation raises two problems: did the ultimate stimulus to the large scale adoption of industry come from within the local economic system as in the case of Dentdale and Garsdale, or from outside, as figure 5.18 would imply? And secondly, how can we be sure that any crisis which forced the adoption of rural industry was caused by rising population and not a fall in the absolute wealth of the community? With regard to the former problem it is difficult to see how the commercial development of rural industry could have originated within the region without the external stimulus of capitalists and entrepreneurs. And if the industry were generated internally then why did not every community facing the prospect of 'overpopulation' develop its own commercially-orientated industry in this way? In fact, rural industry as we have seen was usually organized from outside the region of production: in Westmorland it was Kendal; in Rossendale, Manchester and Rochdale; and in Haut Beaujolais, Lyon and later Thizy and Tarare that were the organizing centres. It would seem more realistic then to regard the large scale commercial development of rural industry as a response on the part of entrepreneurs in nearby regional centres, to the availability of substantial pools of cheap labour. This development might in many instances have been aided by the pre-existence of a textile industry which was an integral part of a subsistence economy.

The second problem is not easily answered, but the indications seem to be that it was the population variable which showed movement in relation to the economic variable, rather than vice versa. The colonization of Rossendale undoubtedly produced rapid population

growth, while the existence of a substantial pool of labour - the sin qua non of industrial development - is more likely to occur through rising population rather than through rising prices and economic difficulty. Furthermore, in areas where there were only limited opportunities to intensify agriculture, agricultural unemployment and underemployment must have been a not uncommon phenomenon.

In the absence of adequate evidence, a large part of this discussion has been perforce speculative and hypothetical. There is little data by which to test the model of figure 5.18. Farm sizes in 18th century Rossendale were very small[50] - too small to be economically viable in many instances, which suggests an accute pressure of population on agricultural resources. They also testify to the prevalence of partible inheritance as well as the dependence of the population on extra-agricultural activities. The situation in Haut Beaujolais in the mid-19th century was similar[50] though it is difficult to say to what extent the smallness of holdings was the result of the Revolution. The enclosure of large areas of common land in East Lancashire after 1770 cannot be seen as being demographically determined: it was not pressure of population on limited resources that induced this change, but rather the simple desire of landowners to improve the land and thereby extract greater profits.

We can probably postulate the following about the origins of the domestic textile industries of Rossendale and Haut Beaujolais. First, the industries have a long history in both regions and for many years may have been conducted on a non-commercial basis. That population growth lead to agricultural underemployment and a pool of surplus labour which attracted entrepreneurs who expanded one of the few economic possibilities of these unattractive upland areas.

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50 see appendix.

As a result the wealth of the communities increased, permitting further population growth which soon produced densities bearing no relation to the agricultural resources in each region. The success of this innovation and the stability it imposed on the socio-economic-demographic systems of Rossendale and Haut Beaujolais is indicated by the sustained rise of population that took place in the rural-industrial parishes throughout the 18th century. Yet surrounding parishes, with little or no interest in the domestic textile industry did not by comparison suffer the sort of tragedy envisaged by Malthus. There was no innovation, no apparent fall in fertility and no catastrophe: merely a steady outward stream of migrants which preserved the equilibrium between population and resources.

Chapter 6: The Factory System.

(6.1) The creation of a new high order, economic system in Rossendale and Haut Beaujolais released powerful new locational stimulants which led to fundamental changes in existing geographic and demographic conditions. The new production system which grew out of the old domestic outwork system was the factory system. The domestic system had proved itself incapable of satisfying demand which was growing rapidly in Western Europe after 1750. Increasing demand meant increasing production, which under the old economic system could by met in two ways: (1) the input of labour could be increased (2) the elements of the system could be modified through invention and innovation. It was through this latter response that the factory system was developed. With it followed a period of intense economic change that originated in a handful of small regions in Britain, and during the 19th century was diffused throughout Western Europe. This period of economic change has become popularly known as the industrial revolution. Rossendale was one of the regions where this revolution first took place. The undercurrents of change were already established by 1780, whereas in Haut Beaujolais, the first ripples of change only became apparent half a century later.

The development of the factory system meant the application of, initially, water, and later steam power to the manufacturing processes, and at the same time it meant that for an increasing number of people place of employment became separated from place of residence on a scale that was quite unprecedented. Industrialization led to urbanization and the concentration of population in towns and cities, as well as the depopulation of many rural areas.

Yet economic change, though far more rapid than anything previously experienced did not result in the sudden replacement of the domestic system by the factory system. In Rossendale the two

systems existed alongside each other until at least 1850, and in Haut Beaujolais until the end of the century. During this time the locational patterns of the domestic textile industry changed: from being widely distributed in both regions it became increasingly confined to those interfluve areas away from the main river valleys, the latter attracting large concentrations of water and steam powered industry. But until 1821 in Lancashire, and 1836 in Haut Beaujolais, there were areas which remained almost completely dependent on the outwork industry. The censuses at these two dates can therefore tell us something about the demographic patterns related to a type of economic organization that dominated both regions throughout the 18th century. In Lancashire, the 1820's were the last years of prosperity in the handloom weaving industry. The decline of this trade and its consequences for the geography and demography of Rossendale and Haut Beaujolais will be considered in chapters 7 and 8. In this chapter it is proposed to introduce the new economic system, discussing the basic inventions that transformed the textile industry, the locational requirements of the factory system and the course of economic change in Rossendale and Haut Beaujolais in the early phases of the industrial revolution.

(6.2) The Transformation of the Textile Industry: the economic transformation of the textile industry (in particular the cotton industry) in the early stages of the industrial revolution, meant the relocation of the spinning sector from the domestic milieu (or urban workshop) to the factory. Movement to the factory took place as a result of several important inventions which made practical the mechanical spinning of large quantities of yarn for the weaving sector. An insufficient supply of yarn had previously been the greatest obstacle to the expansion of the textile trade. The most important inventions were nearly all British, and the contribution of French

inventors, in spite of the work of Vaucanson and later Jacquard, was small.

There were three principal inventions at this period: Hargreaves' spinning jenny; Arkwright's water frame; and Crompton's mule. The spinning jenny had the least impact on the structure of the cotton industry as it was easily adaptable to the requirements of the outwork system. Output of yarn was greatly increased without precipitating any large scale movement to the factory. On the other hand, the water frame and mule demanded sources of water power (or animal power) for their successful operation, and inevitably this altered the locational requirements of the industry. The significance of the water frame and the mule lay in the type of thread they were able to spin compared with that of the jenny. The water frame spun a firm thread that was suitable for the manufacture of cotton warps. Hitherto, this had been impossible, all cotton goods comprising a mixture of cotton weft and linen warp (i.e. fustian). Arkwright's development of the water frame and his association with the entrepreneur Jedediah Strutt led to the establishment of a small mill in Nottingham, where a number of spinning machines were installed and driven by horse power. The success of this venture was indicated when in 1771 a larger mill, driven by water power was built on the banks of the River Derwent at Cromford, Derbyshire.[1] A second mill was soon added nearby at Belper. It was with the development of these mills that the factory system, at first dependent on water power, and later steam, became established. However, in the early stages of industrialization, factories frequently included hand-operated jennies as well as hand looms.[2]

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1 W.English: "The Textile Industry." 1969 p 59.

2 Chapman 1970 op.cit. p 238.

The significance of the mule lay in the finer quality yarns it was able to produce compared with the water frame. The first spinner to use water power to drive mules was David Dale at New Lanark in 1793.[3] The invention of the mule and the dissolution of Arkwright's patent concurred to give the cotton industry a remarkable stimulus. "Capital and labour rushed into this manufacture in a torrent....numerous mills were erected and filled with water frames and jennies, and mules were made and set to work with almost incredible rapidity."[4]

In spite of the invention of the power loom by Cartwright as early as 1786, its immediate impact was negligible, and up to 1820 the factory-based cotton industry was almost exclusively concerned with spinning.[5] The stimulus to perfect and apply the power loom to the textile industry only came when the spinning process had been improved. It was between 1820 and 1850 that the cotton industry in Britain was transformed by the power loom, though even in 1830, hand-loom weavers outnumbered power loom weavers by four to one in England and Scotland.[6]

(6.3) Locational Requirements of the Early Factory System: if we discount the handloom weaving shops of the larger urban areas of Rossendale and Haut Beaujolais, then the early factory system relates to the water powered mills in both regions. The locational demands of such a production system will clearly be very different from those of the domestic outwork system based on the handloom and spinning wheel. Dependence on manual power in the latter system led to a

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[3] English op.cit. p 76.

[4] E.Baines: "History of Cotton Manufacture in Great Britain." 1835 p 214.

[5] Bythell op.cit. p 89.

[6] Bythell op.cit. p 5.

distributional pattern of industry which reflected the existing distributional pattern of population. The industry was therefore a scattered one, equally important in villages and hamlets as well as in the small towns of Rossendale and Haut Beaujolais. In contrast, water power was only available at restricted, point locations. If the old pattern was one of dispersion, the new one was characterized by its concentration - a change that had profound consequences for population distribution and which greatly stimulated the urbanizing process.

Andrew Ure, a contemporary writer on the early development of the factory-based cotton industry in Britain, describes in some detail the locational requirements of an early mill:

> "The site of the factory ought to be carefully selected in reference to....the facilities of the transport of the raw materials, the convenience of a market for the manufactured articles....an abundant supply of labour as well as fuel and water for mechanical power....It should therefore be placed ....in a populous village, near a river or canal but in a situation free from marsh malaria. These circumstances happily conspire in the districts of Stockport, Hyde, Stalybridge, Bury, Blackburn etc. and have greatly favoured the rapid extension of the cotton manufactures."[7]

The availability of water power sites is governed by the nature of stream profiles, and their distribution restricted to upland areas of high rainfall with swift-flowing streams. Both Rossendale and Haut Beaujolais possessed these advantages, and in addition, the Carboniferous rocks of the former, and the extensive igneous and metamorphic outcrops in the latter region ensured a heavy surface run-off and supplies of soft water.[8] The attractiveness of Rossendale in the early stages of industrialization can be gauged from the following observation of Baines in 1835:

> "On the River Irwell from the first mill near Bacup to Prestolee

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[7] A.Ure: "The Cotton Manufacture of Great Britain." 1836 Vol.I p 295.

[8] This statement describes conditions before the severe pollution of rivers and streams through the effluent of bleaching, dyeing, printing and finishing works. see H.B.Rodgers: "The Lancashire Cotton Industry in 1840." I.B.G. 28 1960.

near Bolton, there is about 900 feet of fall available for mills, 800 of which is occupied. On this river and its branches it is computed that there are no less than 300 mills."[9]

However, it is only a partial explanation to say that the early factory system established itself in Rossendale and Haut Beaujolais because of the availability of adequate water power sites there. Granted the presence of such sites was the sin que non of large scale industrial development, it must at the same time be explained why other areas possessing similar physical advantages did not undergo industrialization. We saw in chapter 2 the interesting contrast afforded by a comparison of Bowland with Rossendale. The hypothesis put forward to explain why Bowland never possessed a domestic textile industry of comparable importance was that Bowland suffered from the handicap of its isolation and distance in relation to the major marketing and organizational centres of the industry (especially Manchester). Again in the period of economic change and industrial development at the close of the 18th century the region found itself disadvantageously placed from the viewpoint of relative location. The factory system grew out of the old domestic system, and the capitalists who had been most active in the old system, were presumably involved in the financing of the new system. It seems probable therefore that the location of the factory-based textile industry in Rossendale and Haut Beaujolais represents a classic case of industrial inertia which extends far back beyond the industrial revolution. The factory system, with its demands on water power, labour and point locations, had to be accommodated as far as possible within the existing framework of the domestic system, partly because of the need for proximity between the spinning sector and the still domestically-based weaving sector; partly to absorb the surplus labour that came available with the

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[9] Baines op.cit. p 86.

decline of hand spinning; and partly to minimise disturbance of the existing structure of the industry and thus minimise the costs of change. In geographical terms, the best solution was to establish the new system within the functional region of the domestic system while locating new production units (i.e. mills) as close as possible to the regional node. The Rossendale Massif offered the necessary physical advantages and labour requirements for the water powered industry while at the same time being sufficiently close to Manchester to encourage investment and allow industrial development to take place The Beaujolais Massif had similar advantages, though by the late 18th century it had already established itself as an autonomous industrial region quite separate from Lyon, and organized around several market towns and large villages such as Thizy, Amplepuis and Tarare. Evenso, the same locational considerations would have applied, and in particular the need for proximity between the factory system and the domestic system.

It is therefore no coincidence that areas involved in the early industrial revolution in textile regions were also deeply involved in the domestic textile industry at an early period. This continuity can be synthesized in the following model:

(1) domestic industry establishes itself in areas of low agricultural productivity in proximity to a commercial node. Agricultural underemployment is a feature of such areas which are either naturally infertile (e.g. sandy areas of Flanders) or extensive upland areas with limited scope for agricultural improvement.

(2) industrialists are attracted by these labour surpluses and domestic industry is introduced into the economy. As a result population grows rapidly and densities quickly exceed those of surrounding agricultural areas.

(3) at the period of industrialization with the application of water

power to the textile industry, such areas possessed the following advantages for industrial development:

(a) adequate power sites in the upland massifs.

(b) proximity to commercial and organizational nodes.

(c) high density populations and therefore adequate labour supplies. With the gradual erosion of the hand spinning industry by mechanical spinning, labour surpluses became more apparent.

(d) a pre-existing textile industry, important because the spinning branch, which was the first to become factory based, needed to be in close contact with domestic weavers.

The location of the water powered textile industry in Rossendale and Haut Beaujolais therefore, seems to owe much to historical continuity, induced principally through the forces of relative location and inertia. To quote A.J.Taylor[10] in connection with the Lancashire cotton industry: "the hundred years between 1750 and 1850 witnessed not the emergence of new textile areas but changes of emphasis of those already existing." Later, the development of the steam engine and the abandonment of water power sites for the coalfields in Lancashire, led to fundamental changes in the geography of the textile industry, which bore little relation to pre-industrial trends. Industrial development was never carried this far in Beaujolais, and indeed in Lancashire the speed of change should not be exaggerated: such was the demand for cotton goods in the early part of the 19th century that the number of water wheels in the industry had shown little decline by 1825.[11] However, new mills rarely looked to water as their source of power after this date.

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10 A.J.Taylor: "Concentration and Localization of the British Cotton Industry 1825-1850." Unpublished M.A. thesis University of Manchester 1947. p 21.

11 Taylor op.cit. p 5.

(6.4) The Origins of Industrial Change in Rossendale and Haut Beaujolais:

(i) Evidence: documentary evidence relating to the early phases of industrialization is often fragmentary and incomplete. In order therefore to build up some picture of events at this period it is necessary to assemble data from several sources. For Rossendale the primary sources are: the documents of T.Woodcock Esq. concerning the buying and selling of land in the region;[12] trade directories of the period, in particular those of Pigot and Slater; the county maps of Yates, Greenwood and Teasdale; and the Factory Inspectors' Reports and Returns which are available after 1833. For Haut Beaujolais evidence has been assembled from the following sources: the 'Statistique de la France' of 1848 which refers specifically to industry; the detailed topographic maps of Rembielinski published between 1844 and 1850; and the 'Statistiques Industrielles' which although occasionally available for the early 19th century only occur regularly after 1880.[13] The equivalent of trade directories - 'Les Almanachs de Lyon' - contain little useful information on the location of mills and factories (as distinct from the names of manufacturers) in individual communes.

(ii) The Progress of Change: there are two fundamental differences between the progress of industrial change in Rossendale and Haut Beaujolais. First change took place in Rossendale at least half a century before that in Haut Beaujolais, Rossendale having a significant role in the first industrial revolution. Second change when it did occur in Haut Beaujolais was on a substantially smaller scale compared

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12 Located in the Lancashire Record Office under the code DDX/118.

13 All documents housed in the Archives Départemental du Rhône (cf. Bibliography).

to Rossendale. Away from the valleys of the Reins and Trambouze, the landscapes of Haut Beaujolais bear little trace of the industrial revolution today, and even in these areas the concentration of industrial activity in no way compares with the dense agglomerations of the Irwell and Darwen valleys.

The papers and deeds of T.Woodcock provide a glimpse of some of the processes of change which were beginning to affect the Rossendale valleys towards the end of the 18th century. The mid-1780's appear to have been the decisive turning point in the movement towards industrialization and the establishment of the factory system. The first process of manufacture to be mechanized and power dirven was fulling.[14] Fulling, the process by which cloth is thickened and shrunk, was employed in the woollen industry which dominated the 18th century textile industry in Rossendale. In 1785 the records[15] focus attention on an early fulling mill (Holden Mill, Haslingden) in connection with a water dispute. The documents show that in 1785 a James Law, yeoman, leased two-thirds of a plot of land to a James Hargreaves in order to construct a fulling mill and lodge at Flaxmoss. The profits of the enterprise were to be shared equally between land owner and entrepreneur, which emphasises the value and importance attached to an adequate power site, even at this comparatively early period. Similarly in 1792, James Whittaker, a gentleman, leased a number of closes to Thomas Edmondson, a worsted manufacturer from Garstang, in order that the latter might have access to the waters of the Irwell, presumably with the intention of constructing a mill there.[16] Another early example is that of John Whitaker of Broadclough the

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14 O.Ashmore: "The Industrial Archaeology of Lancashire." 1969 p 37.

15 DDX/118 Parcel 65/1.

16 DDX/118 Parcel 16.

owner of a fulling mill who in 1793 secured an agreement to construct a goit on the River Irwell.[17] The whole process of the transference of agricultural land to entrepreneurs for industrial use is a complex one, but these and similar documents (see appendix) enable something of the picture to be reconstructed and clearly indicate the importance of the last two decades of the 18th century, as the crucial period of economic change in Rossendale.

The inventions and technical innovations which were present at a very early date in Rossendale and Lancashire, penetrated only slowly into France and Haut Beaujolais. The first process to be fully mechanized was carding, in small water powered mills along the Reins and Trambouze. A general picture of the spread and distribution of industry in the départements of the Rhône and Loire can be obtained from the 'Statistique de la France' of 1848.[18] The data cover the period 1821-37 and are abstracted from the 'statistiques annuelles', but suffer on account of their rather generalized nature.[19] Only three mills are listed for the arrondissement of Villefranche.[20] However, twenty-seven manufacturing concerns are listed in all, implying a good deal of factory-type organization but based on human or animal rather than water power. There can be no doubt that industrial development, even by French standards, came late in Haut Beaujolais. The progress of change was more rapid in the neighbouring arrondissements which were more easily accessible (table 6.1).

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17 DDBd 29/5.

18 'Statistique de la France.' Vol. IX 1848.

19 B.Gille: "Les Sources Statistiques de l'Histoire Économique de la France." 1964 p 211.

20 Two mills are listed for St Jean-la-Bussière - one water, one steam powered, and also one water powered mill at Amplepuis. All three mills were engaged in the spinning industry.

Table 6.1 Number of Manufacturing Units.1821-37.

Arrondissement	Water	Steam
Roanne	61	11
Montbrison	8	-
St Etienne	120	60

For Rossendale and Lancashire, the principal source of evidence relating to the number of manufacturing units at the township and sub-regional scale is trade directories. These documents must be used with caution: until the 1820's they are often highly unreliable in that they list only a small proportion of the total manufacturing concerns in the region. It is not known exactly how they were compiled, but presumably, as an early form of advertising inclusion was dependent on the will of, and even perhaps payment by the manufacturer concerned. The later directories of Pigot and Slater are certainly more reliable though in no sense exhaustive, for manufacturers appearing one year will disappear the next, only to reappear at a later date. Nothing other than broad generalizations can thus be safely based on this source. However, table 6.2, compiled from trade directories shows how well established the factory industry in Rossendale had become by the 1820's.

Table 6.2 Number of Mills and Factories 1824 and 1828.

	1824[21]	1828[22]
Haslingden	19	22
Newchurch	18	25
Higher Booths	7	10
Cowpe/Lench/Newh'y	5	6
Over Darwen	5	6
Lower Booths	4	4
Musbury	4	5
Lower Darwen	1	1
Total	63	79

Similar information is available for Beaujolais from the statistical summaries accompanying the topographic maps of Rembielinski.[23]

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21 E.Baines: "History, Directory and Gazeteer of the County Palatinate of Lancashire." 1824-25.

22 Pigot James & CO: "National Commercial Directory for Cheshire, Derbyshire and Lancashire." 1828-29.

23 3PL 611/616 c1 Paris 1849/50.

Table 6.3 Mills and Manufacturers - Haut Beaujolais c 1840.

	Mills	Mfrs		Mills	Mfrs
Amplepuis	5	28	Ancy	1	1
Bourg de Thizy	6	4	Darieze	1	1
Cours	4	6	Joux	2	2
Cublize	2	4	Pontcharra	1	2
Mardore	5	7	St Clement	3	1
St Jean	1	2	St Forgeux	3	3
Thizy	1	3	St Loup	-	1
Ronno	1	1	Tarare	5	21
			Valsonne	1	3

Table 6.3 indicates how rapidly the factory system had expanded during the second quarter of the 19th century. From a total of 27 manufacturing concerns listed by the 'Statistique de la France' for the period 1821 to 1837, the figure had risen to 90 by mid-century for the cantons of Thizy and Tarare alone. Even allowing for the lack of comparability of these two sources of data, this represents a substantial increase. Tarare and Amplepuis were, in terms of the number of manufacturing units, the leading centres of industry in Haut Beaujolais around 1850. It is likely that the textile industry still depended heavily on hand weaving and spinning (table 2.1), the latter process being dependent on the hand-operated jenny. The 23 manufacturers of Amplepuis and the 16 of Tarare who did not occupy mills were probably housed in small workshops ('ateliers') in the central areas of the towns. A similar phenomenon is apparent in the larger towns of Rossendale, particularly at Haslingden in the period 1820-50. The enormous concentration of manufacturers in two or three streets in the central area (Pleasant Street, Deardengate, Bury Road) indicates that they were workshop units engaged in handloom weaving. Table 6.4 shows the importance of this type of organization, a half way stage between the true domestic industry and the power driven weaving shed. The gradual decline of handloom shops at Haslingden

Table 6.4 Workshop Manufacturers Haslingden 1824-1851.

	1824	1828	1834	1851
Cotton Mfrs	31	24	16	11
Wool Mfrs	39	33	16	7
	70	57	32	18

after the 1820's corresponds to the advent of the power loom. In Lancashire until the 1820's the overwhelming majority of mills were engaged solely in the spinning branch of the textile industry. The Power Loom Census of 1835 gives some idea of the slow progress and small impact of the power loom up to this time. In Haut Beaujolais

Table 6.5 Power Looms in Rossendale 1835.[24]

	Cotton	Wool	Firms
Haslingden	185	324	3
Lower Booths	145	107	2
Higher Booths	107	-	1
Newchurch	848	26	8
Over Darwen	506	-	2
	1791	457	16

the rate of progress was even slower, the first power loom not being introduced until 1858.[25] Elsewhere in France after 1850, the hand loom gave way only slowly to the power loom. In Reims for example in 1860, only 900 power looms were in operation compared to 22,500 hand looms in the surrounding countryside.[26] We might conclude that in 1860, the progress of economic change in the French textile industry was still 30 or more years behind that in Britain, while in relatively isolated regions such as Beaujolais, the time-lag was proportionately greater.

After 1850 in Haut Beaujolais the growing concentration of industry in three or four towns is apparent from the trimestrial figures of the 'Situations Industrielles' 1880-82. (table 6.6). They

Table 6.6 Haut Beaujolais: number of Factories 1880-82.

	1880-81	1881	1882(1)	1882(2)	1882(3)
Thizy	16	16	18	18	19
Tarare	26	26	26	26	24
Cours	23	23	23	23	25
Amplepuis	16	16	16	16	16

show that 80 percent of all factories in the arrondissement of Ville-

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24 Parliamentary Papers 1836 XLV 145.

25 Houssel op.cit. pp 138-39.

26 Pinchemel: "Géographie de la France." 1964 Vol.II p 525.

franche were to be found in the cantons of Thizy and Tarare, and in particular in the small textile towns of Amplepuis, Cours, Tarare and Thizy.

The distinctive feature of Rossendale in the mid-19th century was its continued dependence on water power compared with other parts of the textile region of Lancashire. Data on this subject are available in the Factory Inspectors' Returns. The most important of these documents is Horner's statistical appendix to his return of 1841.[27] This return provides a complete census of all mills and factories in the north-west region, including details of work force, power supplies, hours worked etc. Unfortunately each production unit is described in code form and the code has not survived. In consequence it is only possible to locate individual establishments within the broad areal framework of parish units. In the context of Rossendale it is particularly unfortunate that the parish under which the main part of its returns are aggregated - Whalley - is one of the largest in north-west England, embracing not only Rossendale itself, but most of the Calder-Darwen Valley and East Lancashire. Nonetheless, in the absence of any alternative information Horner's data are used in tables 6.7 and 6.8. Table 6.7 emphasises the importance of water power in East Lancashire even at the comparatively late date of 1841. The

Table 6.7 Water Power in the Parish of Whalley 1841.

	Total Units	% using water power	% H.P. water.
Coarse Spinning	44	72.7	50
Spinning/Weaving	49	42.8	23
Weaving	12	25.0	16
Wool	20	75.0	38

distinctiveness of Rossendale and East Lancashire in this respect as well as in its specialization in particular branches of the textile industry can be seen in table 6.8 overleaf.

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27 Parliamentary Papers 1842 XXII pp 355-414.

Table 6.8 Coal and the Lancashire Textile Industry 1841.
(% H.P.from steam)

	Spinning	Spin/Weav	Weaving	Wool
Manchester	1oo	99	100	-
Rochdale	90	92	42	78
Oldham	99	98	100	26
Bolton	84	73	42	-
Preston	100	100	89	-
Blackburn	66	96	90	-
Ashton	98	98	100	26
Whalley	50	77	84	62
Bury	72	84	42	62

The geography of the structural characteristics of the Lancashire cotton industry, based on Horner's 1841 returns, has already been treated in some detail, and will not be discussed here.[28]

In relation to surrounding textile areas located on the Lancashire coalfield, Rossendale at mid-century bore the distinctive traits of an area that pioneered the factory system in its continued dependence on water power. Although Rossendale was situated on the edge of the coalfield[29] the scale of operations after 1850 did not compare with that of neighbouring areas such as Manchester, Bolton, Ashton, Oldham etc. The height of the region's fortunes was undoubtedly in the early 19th century when the textile industry was drawn to water power sites on the Pennine fringe. However, supplies of coal in the Rossendale and Darwen valleys ensured that the transition from water to steam power in the area was a relatively smooth one, with the decay of industry only significant in the high, remote valleys of the uplands.

In many respects the situation in Haut Beaujolais was similar, though more extreme. The area was comparatively isolated but also suffered from not being located on one of the several small

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29 Shallow drift deposits were mined in the townships of Over Darwen, Eccleshill, Yate and Pickup Bank and Eccleshill in 1845 (12 collieries in all). Reports of Inspectors of Coal Mines P/P 1854 (1845)/XIX. Most collieries employed less than 15 persons: see Royal Commission on Children's Employment (mines), P/P 1842 (383)/XVII. Total production 1867 - 102,000 tons. There were 18 mines in the Rossendale Valley in 1845: the main concentrations were around Bacup and Newchurch.

28 Rodgers op.cit. 1960.

coal basins of the Massif Central. St Étienne and the Stephanois region had the advantage of being located on a coalfield, and Roanne, on the Loire was able to benefit from being linked by cheap canal transport to the coalfield of St Blazy. In the later stages of industrialization, regions such as Haut Beaujolais which did not possess local supplies of coal were severely handicapped. Billet,[30] writing of Cours in the second half of the 19th century says:

"Ce qui manquait surtout à Cours, c'étaient les voies de communication et les charbons."

Haut Beaujolais was not able to accommodate technological change, and the transition from water to steam power as effectively as Rossendale. The textile industries of the region never fully regained the prosperity of the 18th century, and briefly that of the 19th century when water powered industry flourished. It is apparent from population trends that by 1890 Haut Beaujolais was already a declining industrial area, while for some time previously economic stagnation had characterized the local economy.

However, the interaction between economic change and the population and regional systems of Rossendale and Haut Beaujolais will be considered in chapter 7.

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30 H.Billet op.cit. p 31.

Chapter 7: Population Change, Age-Sex Structure, Fertility etc. in the Later Censal Period.

In this chapter we analyse those variables considered in chapters 3 to 5 in the light of the establishment of the factory system both in Rossendale and Haut Beaujolais. For this purpose the researcher has at his disposal the original manuscripts of the later censuses of the 19th century in England and France which permit a sharper and deeper analysis of demographic and geographic variables than is possible in preceding periods. We begin by reviewing the employment structure of the two regions, a major causal element in the patterns of the geographic and demographic systems.

(7.1) Employment Structure: data relating to employment structure are taken from the 1851 census enumerators' schedules of England and Wales and the 1851 and 1872 census manuscript returns of France. Classification of occupations in Rossendale before 1841 is only possible using the rather unsatisfactory material published in the abstracts of the early censuses. The limitations of this material has already been discussed (section 4.2). In 1841 the census enumerators' schedules become available for the first time, permitting a classification of occupations according to the specific requirements of the researcher. The 1841 manuscript data are in certain respects inferior to those of 1851 (section 4.3) and for this reason only the latter have been exploited. In France, the manuscript returns of the censuses only become available in 1836 (section 4.5). To the 1836 data have been added data from a sample study of eight communes in Haut Beaujolais, while material is also available from the statistical summaries of the manuscript returns of 1851. These summaries contain a detailed breakdown of age-sex structure at annual intervals and the number married in each age group; the religious structure of the population; and a tripartite division of occupation into agriculture

,industry and services. No indication of how these categories were defined is given in the manuscripts, though the respective percentages in each category do not differ significantly from those defined by the writer (see appendix). All censal data for Rossendale in 1851 and Haut Beaujolais in 1872 are based on a variable sample fraction (see appendix) while those for Beaujolais in 1851 are absolute values based on the entire population.

Twelve principal occupational categories were defined for Rossendale forming sub-sets within the three broad sets of agriculture, the textile industry and others. Classification is according to industry and not occupation: thus an agricultural labourer belongs to the class 'agriculture', while a labourer in the cotton industry belongs to the textile industry. Neither belong to a separate group for labourers. The same system is adopted in the classification of French occupational material. The nature of the census data poses a number of problems of classification. In Lancashire in 1851, the category for weavers is especially problematical. At this time there were two types of weaver: power loom weavers employed in the new mills and weaving sheds, and the traditional handloom weavers, still strongly orientated towards the domestic milieu. This simple dichotomy is confused in the census by the introduction of a third category given the general description of 'weaver'. There is no way of deciding whether these people were weaving by power or by hand. Neither is there much consistency in the definitions of the weaving group by individual enumerators: often the same enumerator will employ all three terms. Thus generalization concerning important occupational groups such as the handloom weavers is greatly hindered. This is not a significant problem in Haut Beaujolais for in 1851 there were no power looms in the region and even by 1872 the impact of the power loom was negligible. Evenso, the 1872 census makes no provision for distinguishing power

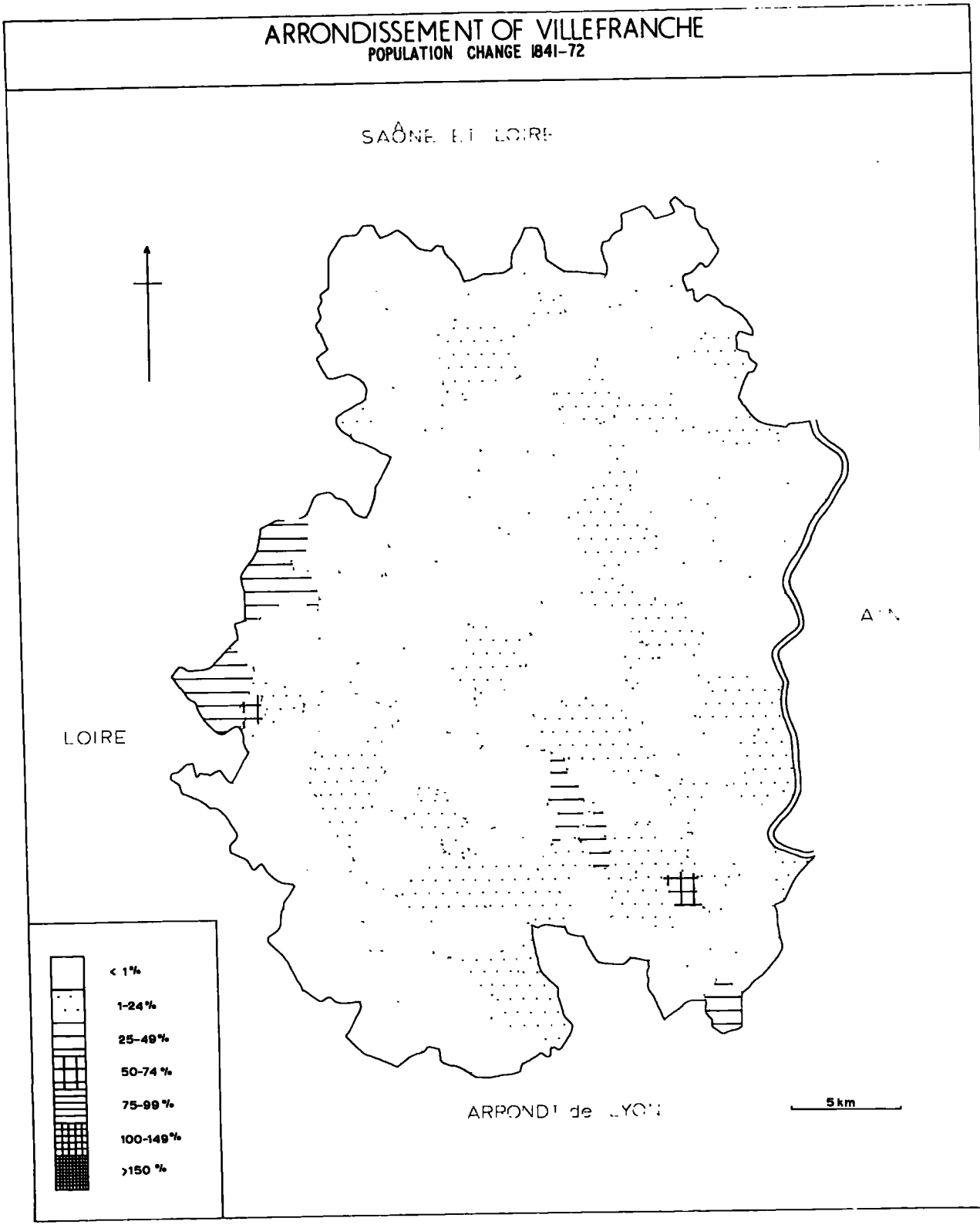
ARRONDISSEMENT OF VILLEFRANCHE
POPULATION CHANGE 1841-72
SAÔNE ET LOIRE
LOIRE
AIN
ARROND! de LYON
5km
< 1%
1-24%
25-49%
50-74%
75-99%
100-149%
>150 %

Fig. 7.1

loom from handloom weavers, all being embraced by the general term 'tisserand'.

The large group 'other textiles' contains a wide range of occupations - piecers, beamers, doffers, rovers, carders, labourers etc which show considerable variation in numbers between townships and communes. The 'agriculture' category is probably underestimated in both regions. The problems of classifying individuals who worked part-time in agriculture and industry remains, though such persons are remarkably few in the censuses. This should not be taken to imply that dual occupations were rare; they almost certainly were not. It more probably reflects the tendency of the individual to declare only his major occupation, quite apart from the desire of the census officer to avoid the obvious complications of classifying those who declared two or more occupations. Underestimation of the numbers engaged in agriculture is also facilitated by the common practice of defining employment as simply 'labourer' without reference to specific industries. Thus a significant proportion of those labourers alotted to the category 'other occupations' might well have comprised persons employed in agriculture. This problem has already been touched upon in relation to the 1836 census in France (section 4.5) and the usefulness of parish register data in the compilation of employment structures (section 2.6). There is a further source of underestimation of the numerical importance of the agricultural sector in the French data of 1872. Here the term 'proprietor' is used to describe the landowner - usually an elderly person not actively engaged in agriculture. It seems likely that this group was included in the agricultural sector in the classification of occupations in the 1851 census. In the writer's classification of the 1872 data this group has been ignored because it was not generally economically active. The discrepancy in the 1851 and 1872 figures for the agricultural sector is largely

attributable to this fact. The service sector includes retailers, professional persons, servants, the clergy etc.

Both in Rossendale and Haut Beaujolais the textile industry is overwhelmingly the dominant source of employment. Within the industry weaving is pre-eminent: seven of the eight communes sampled for Beaujolais in 1872 had over 80 percent of all textile workers engaged in weaving. In an area where mechanization and the factory system had only recently made their appearance, extreme specialization on a single branch of the industry is predictable. All communes in the sample apart from Thizy and Cours were rural in character and weaving was based on traditional hand methods. In Rossendale, by contrast, the diversity of occupations in the textile industry is far greater, and this is almost entirely related to the widespread development of the factory industry in the region by 1851. Nonetheless, there are several rural townships in Rossendale showing a degree of specialization in weaving comparable to that in Haut Beaujolais: Tockholes, Eccleshill and Yate and Pickup Bank for example had 93, 85 and 75 percent respectively of persons engaged in the textile industry employed in weaving. The percentage of handloom weavers in these townships was well above average: in Tockholes 65 percent of weavers still used the handloom; in Eccleshill the figure was 51 percent; and at Yate and Pickup Bank 43 percent. Compare these figures with those for the new urban centre of Over Darwen in 1851; although the township had 72 percent of its textile workers employed in weaving, only 17 percent were handloom weavers. The adoption of the power loom was first seen in the new urbanizing townships, and its influence only felt in rural areas a decade or two later. It is almost certain that a large proportion of power loom weavers living in rural areas found employment in nearby urban areas such as Darwen, Haslingden and Bacup.

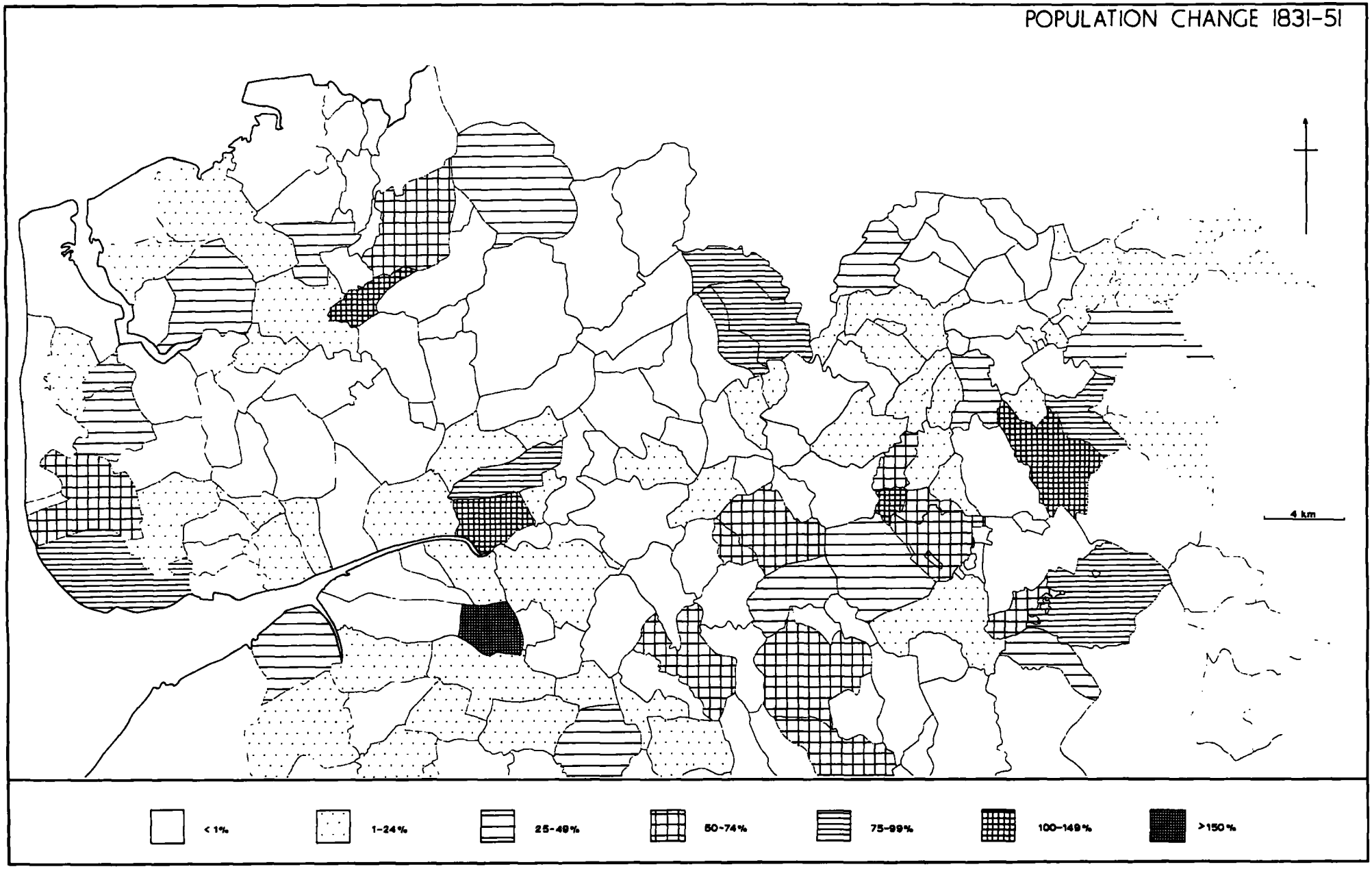
POPULATION CHANGE 1831-51
4 km
< 1%
1-24%
25-49%
50-74%
75-99%
100-149%
>150%

Figure 7.2

Table 7.1 Handloom Weavers in Bowland and the Ribble Valley 1851.[1]

	HLW's	% total popn.		HLW's	% total pop.
Bolton-by-B'land	70	7	Newsholme	6	11
Chaigley etc.	106	9	Paythorne	14	7
Chatburn	50	10	Rimington	139	30
Downham	42	12	Sawley	32	10
Gisburn	52	10	Slaidburn	82	14
Grindleton	153	23	West Bradford	21	6
Horton	36	23	Whalley	30	3

The theory that declining industries decay slowest in areas where alternative employment opportunities are fewest is well illustrated in table 7.1. The townships of Bowland and the Ribble Valley were almost exclusively engaged in agriculture or industry or both, and were located on the extreme margins of the functional region of the domestic textile industry. Although undoubtedly suffering severe decline by 1851, the domestic industry still survived in spite of distinct locational disadvantages and the undermining of the economic basis of handloom weaving with the enormous expansion of power weaving. The lack of alternative employment opportunities in an area remote from the coalfield is without doubt the key to the understanding of this situation. The weavers in this region were not found widely scattered throughout the countryside, but tended to be concentrated in a small number of nucleated settlements that were themselves largely the creation of the domestic textile industry. Among the largest were the villages of Slaidburn, Rimington, Grindleton, Gisburn, Chatburn and Hurst Green. The township of Slaidburn was divided into two enumeration districts: the first included the village of Slaidburn, containing 82 handloom weavers in 1851; the second included the extensive upland areas to the north and west (the Bowland Fells): in this area in 1851, out of a total population of 182, only two were employed in handloom weaving, the remainder of the economically active population being farmers and farm labourers.

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[1] H.O.107 2255 479 2/3.

The 1851 census data on the employment structure of Rossendale reveal two types of township: (1) those with the bulk of their population engaged in the textile industry (particularly weaving), and with an unusually high percentage of this weaving group still occupied in handloom weaving. These townships, in many ways similar to those described for Bowland and the Ribble Valley, had only relatively small percentages of their population employed in agriculture, and employment opportunities in industries outside textiles were strictly limited. Moreover, the service sectors in these townships is poorly developed. The following townships can be included in this category (see appendix for detailed breakdown of employment structure): Tockholes, Eccleshill, Yate and Pickup Bank, Dunnockshaw, Musbury and Henheads. (2) at the other end of the spectrum are townships where rapid industrialization and urbanization together with heavy in-migration were taking place. In townships like Newchurch-in-Rossendale, Haslingden, Over Darwen and Lower Booths, the mechanization of the textile industry was virtually complete by 1851, while water powered mills were fast disappearing with the advent of the steam engine and the utilization of coal. There is, however, little variation between the percentage of the working population employed in the textile industry in these townships, compared with the more rural townships of group 1. The average percentage of the employed population engaged in the textile industry in 13 townships in Rossendale is 63.5 with a standard deviation of only 8.1 percent. The coefficient of variability is 12.7 percent. The distinctive features of the townships of this class are: the small percentage of the population employed in agriculture (average 6.2); the existence of a rudimentary, though significant service sector; and the availability of employment outside the textile industry. The last ought not to be overemphasised. The industrialized (i.e. urban-industrial) townships were only diversified

in comparison with the surrounding rural townships, and in absolute terms were in effect dependent on a single industry.

In Beaujolais, the classification of communes according to employment structure is based on the percentage of the employed population engaged in agriculture. In a region where the only secondary industry of importance was textiles, classification on the basis of the percentage agricultural population automatically becomes, in part, a function of the numbers occupied in this sector. Several types of commune are recognised for Beaujolais at this period where in spite of a lack of diversity of occupation, the structure of individual communes was highly varied. First there are those communes which can safely be described as agricultural. In our sample (1851) they are represented by Dracé, St Lager and Joux. The first two communes, located on the Saône Plain and the Côte were exclusively engaged in arable farming and viticulture. Joux on the other hand, located in the massif close to Tarare, had approximately half its area tilled in 1859[2], two-thirds of the arable being under rye, the remainder being given over to oats, potatoes and a little wheat. Elsewhere extensive hill pastures predominated, about half of which had been improved.

A second group can be recognised as that where agriculture was the major economic pursuit but where industry was fairly well developed, although employing less than half the working population. Affoux and St Clement-sur-Valsonne located in the massif belong to this category. Varnet[3] describes Affoux thus: "climate cold; mountainous soil, stony and generally infertile, producing cereals and potatoes." St Clement, with a larger area of valley land was more favourable to cultivation. Wheat was the leading crop by area cultivated, followed

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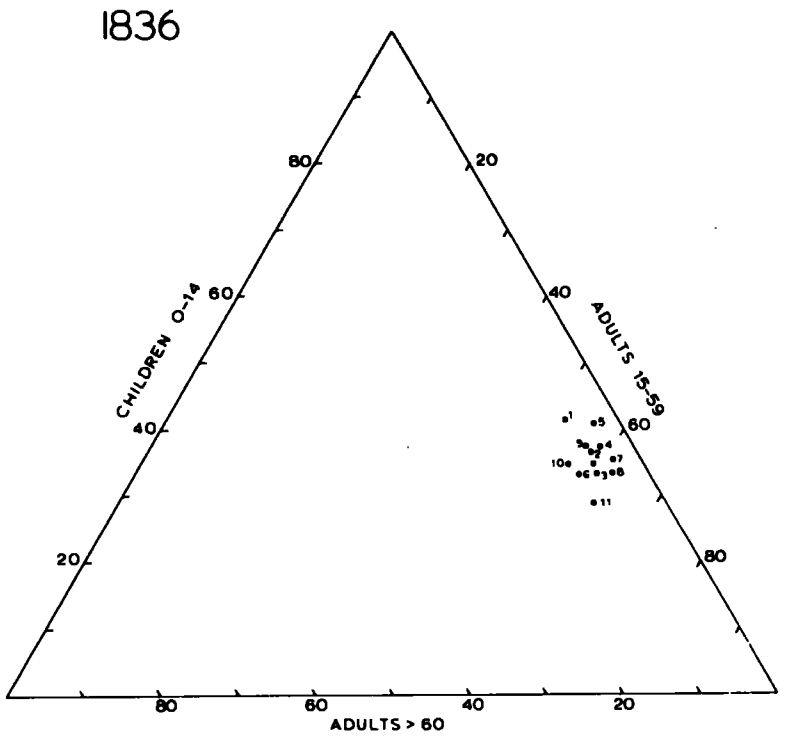
2 'Statistique Agricole' 1859.

3 F.A.Varnet: "Géographie du Département du Rhône." 1897 p 331.

HAUT BEAUJOLAIS AGE STRUCTURE



1	Affoux	9	St Clement
2	Amplepuis	10	St Jean
3	Bourg de Thizy	11	Thizy
4	Chapelle de Mardore	12	Tarare
5	Cours	13	Cublize
6	Joux	14	Drace
7	Mardore	15	St Georges
8	Marnand	16	St Lager

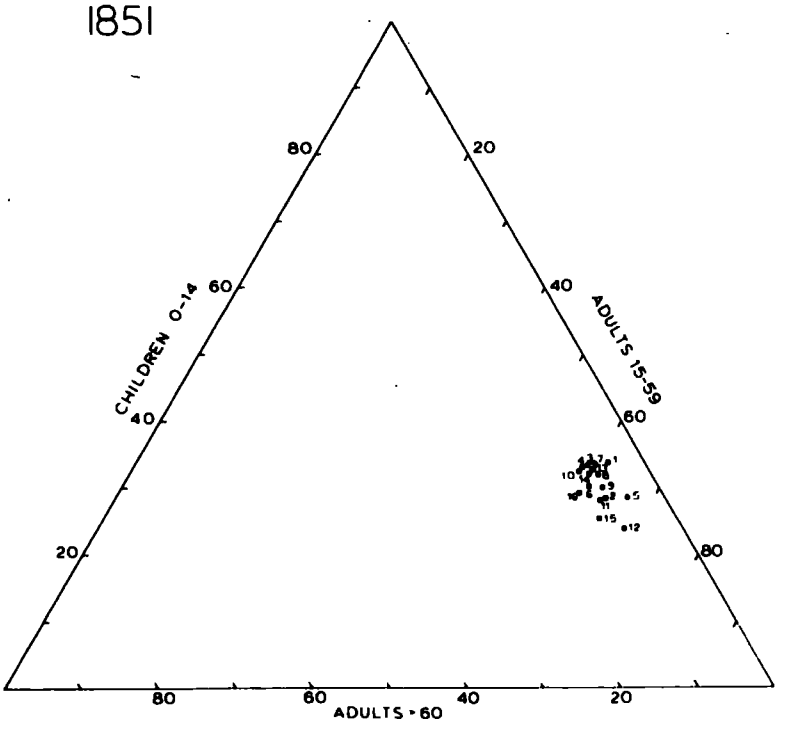


Figure 7.3

by rye and potatoes. In the mountainous areas (maximum altitude 719 metres) permanent, rough pastureland predominated.[4] The third category consists of those communes where the textile industry (in particular handloom weaving) was the major employer, and where the proportion engaged in agriculture was usually less than one third. In addition employment outside the domestic textile industry and agriculture was virtually negligible. Communes falling into this 'rural-industrial' category include: la Chapelle de Mardore; Marnand; Bourg de Thizy; St Jean-la-Bussiere; Cublize; Cours; Mardore; and Amplepuis. Finally there is a group of communes with an unusually large percentage of the population involved in services and other industries. Tarare and Thizy are basically'urban-industrial', and in this respect comparable to townships such as Haslingden and Newchurch in Rossendale. The service sector at Tarare and Thizy in 1851 reflects the traditional functions of these communes as markets and central places for the surrounding rural hinterlands, which in the case of Tarare has been enhanced by its importance in the 18th century as a staging post on the main routeway from south east France to Paris via the Loire Valley. The existence of an important sector of other industries in these communes is related to the progress of industrial change and mechanization, which had gone further in these towns then elsewhere in the whole of Beaujolais. St Georges-des-Reneins stands alone as a commune with a preponderance of its population engaged in agriculture (50 percent) and yet with 21 percent engaged in services and industries other than textiles. The explanation of this anomaly possibly lies in the commune's role in the wine trade of the Côte as well as its location on the principal routeway from Lyon to Paris via the Bourgogne. The favourable climate of the Saône Valley and the rich alluvial soils of the flood plain, resulted in three-quarters of the tilled

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4 'Statistique Agricole' ibid.

area of the commune in 1859 being under wheat.[5]

Employment structure in both Rossendale and Haut Beaujolais is crucial to an understanding of the demographic characteristics of the two regions around mid-century. Economic factors are regarded as the principal independent variables accounting for variations in age-sex structure, fertility, mortality, population change, density, migration etc. to be considered in the remainder of this and the last chapter.

(7.2) Age-Sex Structure: the age-sex structure of the Rossendale townships in 1821 reveals a broad-based pyramid whose shape is progressive, reflecting the high fertility and rapid natural increases of the preceding 20 or 30 years. The decades 1811-21 and 1821-31 were in fact the inter-censal periods of fastest population growth in modern times.[6] In 1821 the bulk of the population (two-fifths to one half) were children under 15 years, with only small percentages of the total population in the older adult and aged categories. Thus, the changing age structure of Rossendale 1821-51 (table 7.2) can be summarized as follows:

(1) a decline in the percentage of children in all townships.

(2) an increase in the percentage of young adults.

(3) an increase in the percentage of older adults.

(4) a general increase in the percentage of aged.

The decline in the percentage of children in all townships 1821-51 reflects the substantial fall in fertility which took place after the first 30 years or so of the 19th century. In 1821 the average percentage of children per township in Rossendale was 46.6; by 1851 this figure had fallen to 37.7 percent. Ten out of the twelve townships

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5 'Statistique Agricole.' ibid.

6 Deane and Cole op.cit. p 288. Increases 1811-21 and 1821-31 were 16.0 and 14.9 percent respectively for the United Kingdom.

Table 7.2 Age Structure 1851.

	0-14	15-39	40-59	+60
Cowpe, Lench etc*	37.2	42.3	18.8	1.7
Dunnockshaw*	32.5	44.2	13.9	8.1
Lower Booths*	30.3	50.3	14.9	6.5
Higher Booths*	31.3	45.1	16.7	5.9
Henheads*	40.7	35.0	16.2	8.1
Newchurch*	35.6	44.1	15.6	4.7
Yate&Pickup Bk*	44.8	37.6	14.8	2.8
Haslingden*	38.4	40.0	15.7	5.9
Lower Darwen*	38.9	40.5	14.0	6.6
Over Darwen*	38.7	41.4	15.3	4.5
Eccleshill*	44.1	36.2	17.1	2.6
Tockholes*	40.0	34.7	17.1	8.2
Blackburn	36.5	43.6	15.0	5.0
Burnley	38.4	43.0	14.5	4.1
Mellor	39.7	37.5	16.2	6.8
Pendle	40.6	37.4	15.0	7.0
Slaidburn	34.5	40.2	15.9	9.4
Gisburn	34.7	37.7	16.9	10.7
Musbury*	39.3	39.3	15.3	5.1

* = sample study (see appendix) by township. Remaining data refer to coarser registration districts.

for which comparable data (1821/51) are available showed an increase in the percentage of young adults. This would seem largely to be a function of large birth cohorts resulting from high fertility in the period 1810-30, which by 1851 found themselves in the age groups 20-40 years. Concurrent with this trend, the percentage decline of children, which was universal throughout East Lancashire, had the effect of inflating the percentage of young adults, and indeed all groups in the population structure. Thus the general increase in the percentage of older adults is attributable to the same processes outlined for the young adult group above. However, an additional factor in this instance is the declining level of mortality, which by 1851 was beginning to have an effect not only on infant mortality but on mortality in the older age groups as well. The trend towards an increase in the percentage of the population aged over 60 years (in 8 of the 12 townships) undoubtedly is related to this downward movement of the mortality curve.

There are important differences in age structure between

economic types of township defined in the previous section. The most significant is the dichotomy between rural and urban areas. The larger percentages of children in rural townships is largely to be accounted for in their higher fertility (section 7.3), which is a continuation of the trend discernible in the 1821 census. The larger percentages of young adults in urban townships is a function of the differential effects of migration. The urban areas after 1830 and the collapse of the handloom weaving industry received large influxes of displaced weavers from the rural areas. These short-distance movements were, of course, supplemented by migrational movements from further afield, in particular from Ireland. The overall effect was to inflate the number of young adults in urban-industrial townships and at the same time produce a deficit of young adults in rural areas suffering depopulation owing to the lack of alternative employment opportunities outside of the domestic industry.

Data concerning age structure in Beaujolais are available for 1851 and 1872. The latter are derived from a systematic sample of the 1872 census; the 1851 data are abstracted from the tabulated summaries of the 1851 census. Table 7.3 shows changing age structures in Haut Beaujolais (compare with table 5.2).

Table 7.3 Beaujolais: Age Structure 1851.

	0-14	15-39	40-59	+60
Thizy	28.2	42.8	20.3	8.5
Bourg de Thizy	33.3	38.5	20.4	7.8
St Jean-la-B.	32.3	40.2	18.6	8.9
Mardore	33.3	40.3	18.7	8.6
Chapelle de M.	33.0	40.7	18.0	8.3
Marnand	32.4	41.8	18.6	7.2
Cours	28.6	47.7	18.4	5.2
Affoux	33.7	40.2	21.0	5.0
Joux	30.7	39.8	20.9	8.5
St Clement	30.7	40.8	21.4	7.6
St Lager	29.4	40.9	19.0	9.8
Cublize	32.8	38.3	19.9	9.0
St Georges	25.1	41.8	23.4	9.6
Dracé	32.1	36.5	23.1	7.5
Tarare	23.8	46.1	22.1	8.0

Comparison of tables 7.3 and 5.2 leads to the following conclusions:

(1) the percentage of children aged 14 years and less declined in all but one of the ten communes for which comparative data are available.

(2) there was no clear pattern of change in the young adult age group: four communes increased their percentages in this category while six communes showed a percentage decline.

(3) there was a marked increase in the percentage of older adults - only one commune showed a percentage loss.

(4) the general trend was for an increase in the percentage of the population aged 60 years and over. Seven communes showed increases, two showed decreases and in the commune of Joux there was no change.

These trends are very similar to those for Rossendale 1821-51. The most significant feature is undoubtedly the declining percentage of children resulting from a substantial, though less dramatic fall in fertility than in Lancashire. At the same time falling mortality, coupled with the progression of the large birth cohorts of the period 1790-1810 into the older adult group, produced an increase in the percentage of the population in this and in the old age group. The only significant difference between Beaujolais and Rossendale is in developments in the young adult age group. The fact that this group did not consistently increase in Beaujolais as in Lancashire, is probably explained by the greater overall intensity of out-migration of young adults at this period from Haut Beaujolais. The age-sex pyramids for Beaujolais in 1851 (figs. 7.4 and 7.5) are more narrowly based than those for Rossendale and East Lancashire (figure 7.6). The ageing of the population and the regressive characteristics of the age-sex pyramids of Beaujolais was already apparent in 1836. The movements in the age structure of the population 1836-51 is illustrated in figure 7.3

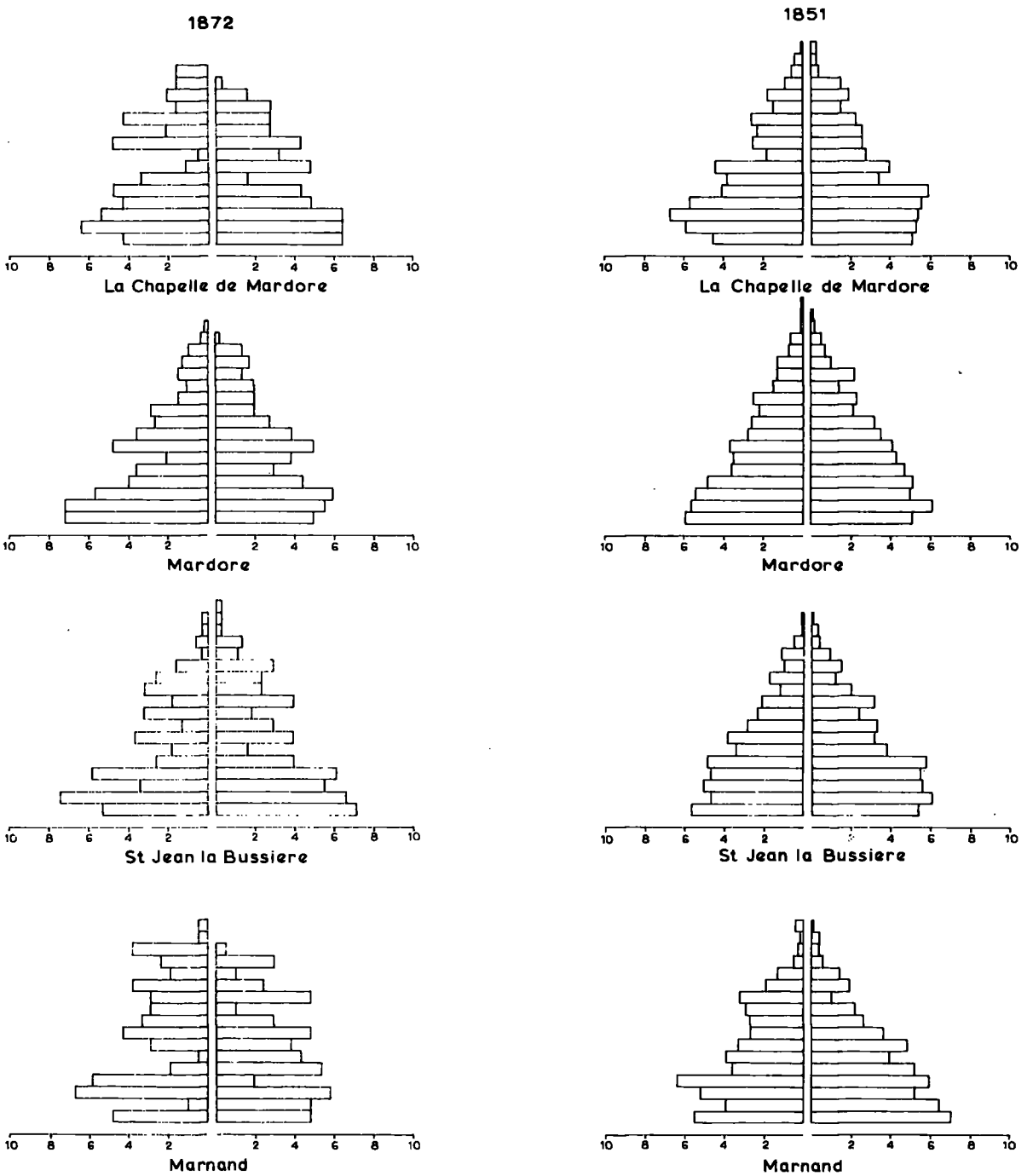

Fig.7.4 Haut Beaujolais: Age-Sex Structure 1851/72.

and shows the clear trend towards ageing of the population. The crude birth-rate of the département of the Rhône 1836-40, fell from 32.3 per 1000 to 27.6 in the period 1851-55. The fall in the crude death rate over this same period was significant though less dramatic - from 26.3 to 24.7 per 1000.

Table 7.4 gives differential age structures of the communes in table 7.3. Communes are classified according to their employment structures examined in section 7.1. The three principal classes - urban-industrial, rural-industrial and agricultural are compared with the overall population structure of the departement.

Table 7.4 Differential Age Structures 1851.

	Rhone	Urban-Ind.	Rural Ind.	Agricultural
0-14	25.0	25.7	32.3	30.7
15-39	44.5	43.5	41.5	39.7
40-59	22.7	21.9	18.8	21.0
+ 60	7.8	8.9	7.4	8.6

Communes with an appreciable service sector in our sample (urban-industrial i.e. Tarare, Thizy, St Georges-des-Reneins) have an age structure which corresponds fairly closely to that of the departement as a whole. The age structure of the departement is strongly influenced by the large urban centre of Lyon, which by 1851 accounted for nearly half the total population of the departement. The largest age groups are those of the young and older adult categories, especially the former (i.e 15-39). Arminjon explains this situation thus:

"par le fait que la population est composée pour une partie d'immigrés venus des départements voisins et qui sont dans la force de l'age..."[7]

In spite of the smallness of the sample it seems safe to conclude that communes such as Thizy and Tarare (St Georges as we have seen is a special case) were experiencing net migrational gain through the in-migration of young adults from surrounding rural areas. Employment opportunities in these communes which were the first in the region

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7 Arminjon p 114.

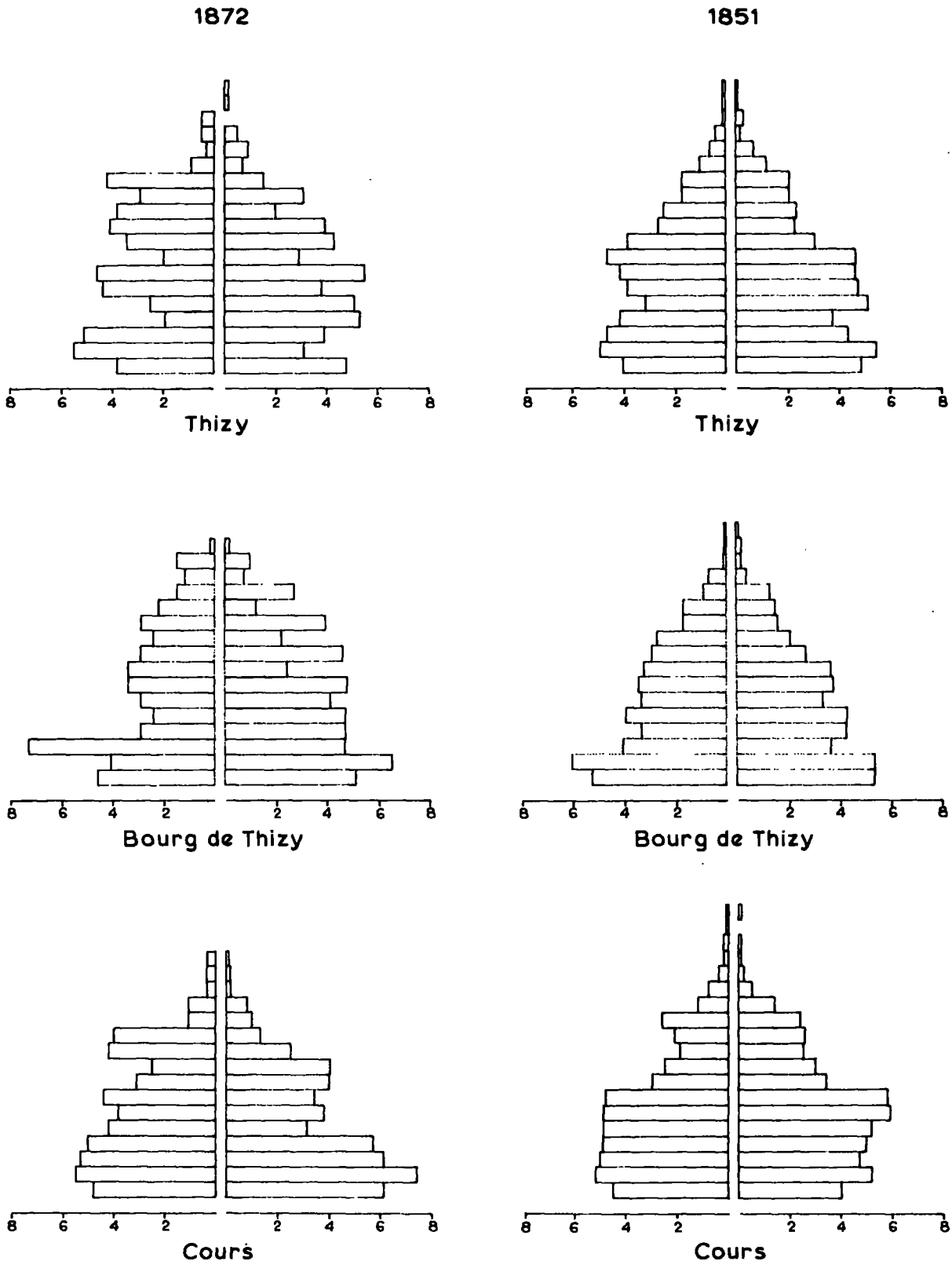

Fig.7.5 Haut Beaujolais: Age-Sex Structure 1851/72.

to undergo the processes of industrialization and urbanization were greater than in the surrounding rural-industrial and agricultural communes. Though movements of this type into the principal towns and villages of Haut Beaujolais had been a feature of the region since the early 18th century, industrialization gave a fresh stimulus to this trend. Communes experiencing substantial influxes of migrants can be compared to townships such as Haslingden and Newchurch-in-Rossendale, and at a larger scale with towns like Blackburn and Burnley. Similarly areas of net migrational loss were primarily engaged in agriculture and/or domestic industry. Table 7.4 shows agricultural communes to have had a deficit of young adults, which in large measure can be attributed to the differential effects of out-migration. Neither is this a new trend, for out-migration can be detected in parish register material of the 18th century, though after the Revolution, and for a period of 20 to 30 years, this trend appears to have been arrested. The deficit cannot, however, be entirely attributed to the migrational process: fertility in the agricultural areas was higher than in the other two groups. The general effect would have been to reduce the percentage of young adults in relation to the percentage of children. The rural-industrial communes in 1851, unlike their counterparts in East and Central Lancashire, had not yet begun to suffer depopulation as a result of the decay of the domestic textile industry. Thus in 1851, out-migration had not assumed significance and the age structures of such communes showed little appreciable change. With 41.5 percent of the population in the young adult category, compared to 43.5 percent in the urban areas and 39.7 percent in agricultural areas, the hypothesis of a 'closed' population in rural-industrial communes up to 1851 seems plausible.

In 1851 both in Rossendale and Haut Beaujolais the two general age classes which showed greatest change over the preceding

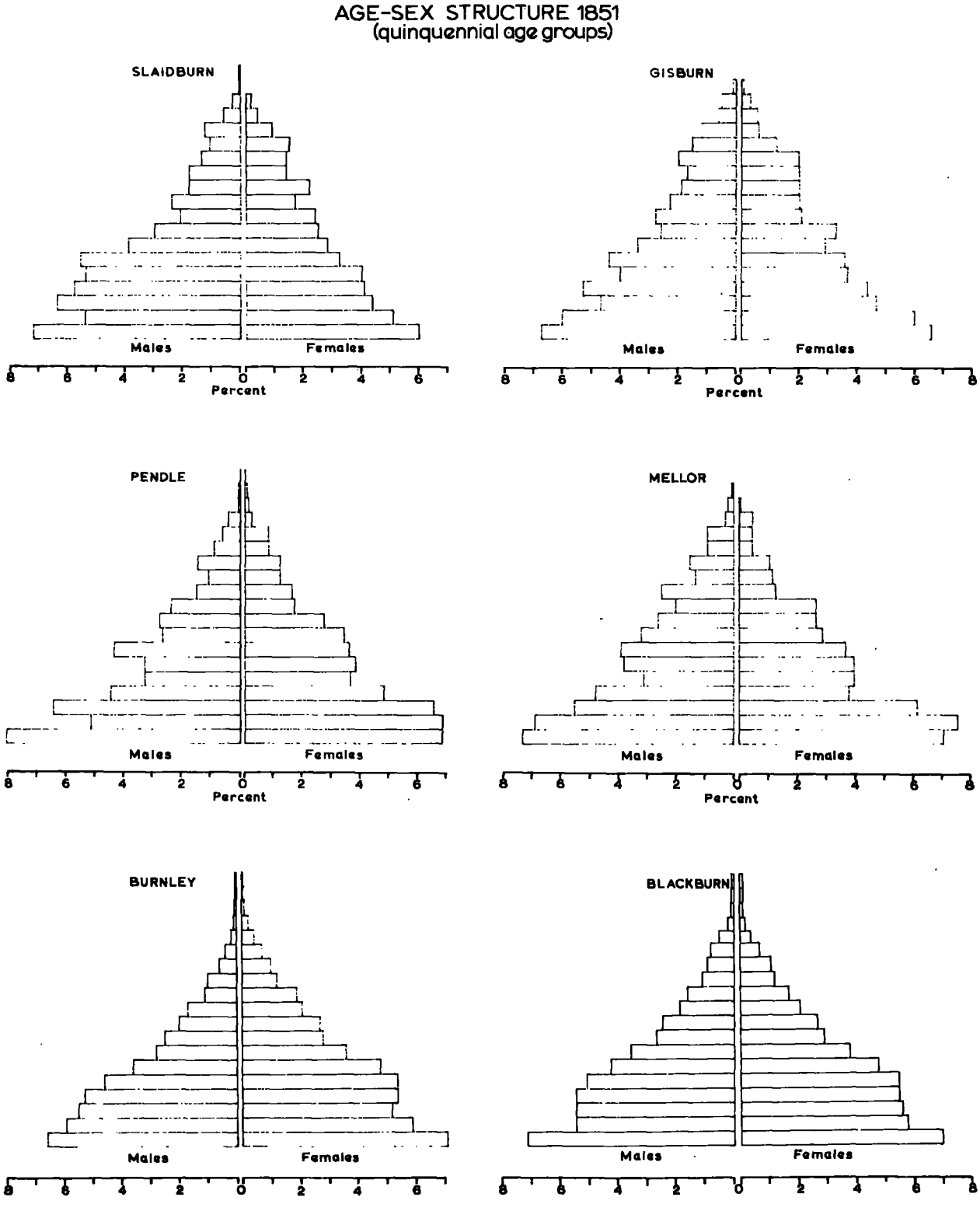
AGE-SEX STRUCTURE 1851
(quinquennial age groups)
SLAIDBURN
GISBURN
PENDLE
MELLOR
BURNLEY
BLACKBURN
Males
Females
Percent
8 6 4 2 0 2 4 6 8

Figure 7.6

Table 7.5 Age Structure: Haut Beaujolais 1872.

	0-14	15-39	40-59	+ 60
Bourg de Thizy	32.5	35.5	22.3	9.1
Cours	35.3	39.5	20.9	8.5
La Chapelle	36.4	31.6	25.2	7.4
Mardore	36.4	37.9	16.8	8.7
St Jean	35.3	33.6	21.1	9.9
Thizy	26.2	38.0	27.5	8.2

20 to 30 years were children and young adults. The 1872 data of age structure for Haut Beaujolais (table 7.5) show change in the period 1851-72 to have been greatest in the young and older adult age groups. The percentage of young adults in each of the communes in table 7.5, declined in this period while the percentage of older adults increased in every commune except Mardore. This latter trend is explained by the natural ageing of the population and the movement of the large percentages of the total population occupying the young adult age category in 1851 into the older adult age category in 1872. This in turn is a reflection of high fertility in the early decades of the century. The marked decline in the percentage of young adults can be explained by the same ageing process of the reduced percentages of children discernible in the 1851 census. Added to this is the continued fall in fertility and mortality producing further ageing of the population at both the 'apex' and the 'base' of the age-sex pyramid. By 1872 the regressive characteristics of the population pyramid were quite advanced (figs.7.4 and 7.5). This tendency is particularly evident at Thizy, where fertility rates throughout the first half of the 19th century had been substantially below those of neighbouring communes.

Differences in the age structures of Rossendale and Beaujolais are largely the product of national differences between Britain and France. The changes that took place in the two regions after the first two or three decades of the 19th century are accounted for by an ageing of their respective populations through the operation of

two sets of processes: (1) declining fertility reducing the percentage of children (2) declining mortality which particularly affected the older age groups. The overall effect of these processes was to some extent modified by the respective vital rates of the two regions, a subject that will be discussed in more detail in section 7.3. The major difference in vital rates between Britain and France in the 19th century was the higher level of fertility prevailing in Britain producing a more youthful population than that of France. The discrepancy in the crude birth-rate between the two countries became increasingly marked in the course of the century. In 1800 the CBR in England and Wales was 37.3 per 1000, compared to 32.9 in France. By 1870 England's CBR had fallen only a couple of points to 35.2, while in France the figure had fallen rapidly to 25.2. The result was an increase in Britain's population from 10.6 to 37.1 millions 1801-1901 and an increase in France's population in the same period from 28 to 40.5 millions. In Britain, the 19th century was a period of vigorous natural increase: in France after 1850, the crude death-rate commonly exceeded the crude birth-rate, and growth in many areas was only maintained through in-migration.

Differential age structures within Rossendale and Haut Beaujolais are comparable. Areas of industrialization and urbanization had smaller percentages of their populations in the younger age groups, and in consequence their population pyramids were less broadly-based compared with more rural areas. On the other hand, the urban areas had a greater proportion of young adults. In these two facts we see the interaction of population dynamics and migratory movements in modifying the age structures of populations. The urbanizing areas were receiving influxes of migrants from surrounding rural areas thus giving them abnormal numbers of young adults. Meanwhile fertility in these areas was lower and contributed to the comparatively small percentages of

children in urban-industrial townships and communes. Trends within Rossendale and Haut Beaujolais were therefore similar and the major disparities stem from national differences whose causes are complex and cannot be defined here. There is also evidence of continuity in differential age structure and vital rates not only between the early and mid-19th century, but equally between 18th and 19th century trends.

(7.3) Fertility and Mortality: we have already touched on the subject of population dynamics which is central to any consideration of age structure. Tables 7.6 and 7.8 show general fertility levels in Beaujolais and Rossendale respectively. In Beaujolais mean general

Table 7.6 General Fertility: Children 0-4/Females 15-49.

	1851	1872
Amplepuis	41	-
Cours	28	41
La Chapelle	37	42
Mardore	41	50
St Jean	40	51
Bourg de Thizy	39	33
Thizy	31	28
Marnand	45	33
Affoux	46	-
St Clement	32	-
Joux	43	-
Cublize	38	-
Tarare	24	-
Dracé	47	-
St Lager	42	-
St Georges	34	-

fertility declined from 46 children aged 0-4 per 100 women aged 15-49 in 1836, to 38 in 1851. This fall in fertility was in line with national and departmental trends (table 7.7). In the period 1851-72

Table 7.7 CBR's and CDR's: Britain, France and Rhone.

	Britain[8]	France[8]	Rhone[9]
1830	36.6	30.3	33.8
1840	36.6	28.5	31.1
1850	32.6	27.1	27.6
1860	34.1	26.9	26.5
1870	35.2	23.1	24.2
1880	35.4	25.2	22.1
1890	32.4	22.9	18.8

8 Guillaume and Poussou op.cit. p 273.

9 Arminjon op.cit. p 114.

fertility levels appear to have stabilized themselves, and in the national figures a slight recovery is apparent. Although not discernible in table 7.7, the département of the Rhône experienced a similar brief recovery. In the decade 1851-61 for example the crude birth-rate increased from 24.7 to 25.2 per 1000. However, in view of the heavy in-migration into the departement care must be taken in interpreting the significance of fertility as indicated by CBR's. In spite of this, the increase in the CBR does seem to represent a resurgence of fertility at this period: general fertility rates in four of the seven communes sampled in 1872 show an increase on those of 1851. There is no indication of any correlation between the fertility variable and other economic variables in the region. Nevertheless, fertility levels in 1851 are positively correlated with the percentage of the employed population engaged in agriculture. Data on employment (see appendix) were correlated with general fertility levels in 1851 using the Spearman Rank Correlation. The value of + 0.6 with 14 degrees of freedom proved significant at the 95 percent confidence level. A similar significant correlation was obtained using the same type of data for 1836 (page 99). Agriculture produced higher fertilities than either rural-industrial and urban-industrial communities, which is consistent with the findings for 1836. The low fertility levels in urban-industrial townships and communes in 1836/51 and 1872 is predictable in view of the large rural-urban fertility differentials which exist in most parts of the developed and developing world today. The rural-industrial communities based on handloom weaving had intermediate fertility levels.

General fertility levels in Rossendale in 1851 were substantially above those in Beaujolais, which again reflects national trends. In all the Rossendale townships except Henheads, fertility rates fell between 1821 and 1851. In 1821 townships with the highest fertility

Table 7.8 General Fertility: Children 0-4/Females 15-49: 1851.

Blackburn	52	Lower Darwen	57
Burnley	55	Mellor	60
Cowpe, Lench	56	Musbury	55
Dunnockshaw	61	Newchurch	49
Eccleshill	71	Over Darwen	53
Gisburn	61	Pendle	64
Haslingden	48	Slaidburn	86
Henheads	61	Tockholes	63
Higher Booths	45	Yate and Pickup Bk	77
Lower Booths	30		

were the rural-industrial townships dependent on the domestic textile industry. Although by 1851 the domestic system was rapidly giving way to the factory system, the rural-industrial townships maintained their position as areas of highest fertility. A Spearman Rank Correlation was performed on the 1851 general fertility data and those relating to occupations at this date (see appendix). The percentage population employed in agriculture showed a positive correlation with general fertility of + 0.71 with 11 degrees of freedom, this value being significant at the 99 percent confidence level. However, this correlation does not conform to that for Beaujolais, where the communes with highest fertility levels were not those engaged in rural industry, but those where agriculture was the dominant economic activity. In table 7.8, the registration districts of Mellor and Pendle, though not without handloom weavers, were predominantly agricultural, and both have lower fertility levels than townships such as Tockholes, Eccleshill and Yate and Pickup Bank where handloom weaving was still of major importance. It could, however, be argued that percentage of population in agriculture is equally an index of urbanization as of rurality. It might be more convincing therefore to consider fertility as a function of urbanization/industrialization, rather than a simple response to agriculture.

Mortality changes in Britain and France, particularly from 1820 onwards, were far less spectacular than changes in fertility.

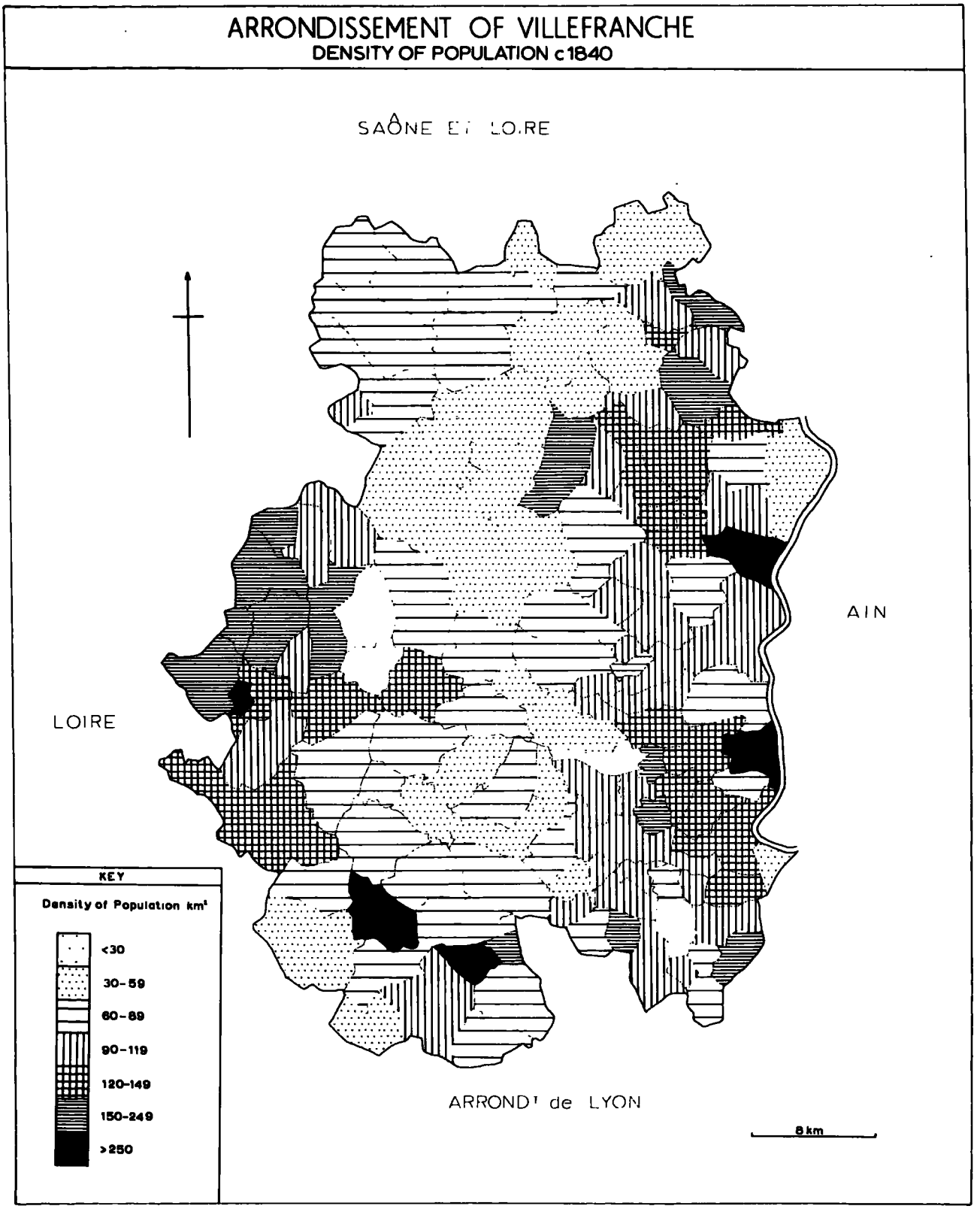
ARRONDISSEMENT OF VILLEFRANCHE
DENSITY OF POPULATION c 1840
SAÔNE ET LOIRE
AIN
LOIRE
ARROND' de LYON
KEY
Density of Population km²
<30
30-59
60-89
90-119
120-149
150-249
>250
8 km

Figure 7.7

The respective crude death-rates of England and France in 1820, were 21.1 and 24.3 per 1000. By 1900 these figures had become 18.2 and 20.1 respectively. We have no mortality data which relate to Rossendale or Beaujolais. However, the effect of this slow decline in the curve of mortality was to accelerate the process of the ageing of the population of the two regions, and specifically to age the population at the 'apex'. The most important changes in age structure were, nonetheless, more particularly a result of declining fertility.

(7.4) Sex-Ratios: it was seen in section 4.7(3) that in both Rossendale (1821) and Beaujolais (1836) agrarian areas tended to have surpluses of males, and industrial areas, whether rural- or urban-industrial had surpluses of females. The imbalance was most apparent in the young adult age group. Table 7.9 shows sex-ratios in Rossendale and East Lancashire in 1851. The ratios express the number of males per 1000 females. Table 7.10 shows sex ratios defined on the

Table 7.9 Sex-Ratios: Rossendale and East Lancashire 1851.

Bolton-by-Bowland	1074	Horton	1171
Chatburn	1168	Lower Booths	915
Cowpe, Lench etc.	985	Lower Darwen	925
Downham	936	Musbury	993
Dunnockshaw	911	Newchurch	989
Eccleshill	1000	Over Darwen	956
Gisburn	940	Paythorne	1369
Grindleton	1081	Rimington	1003
Haslingden	950	Sawley	1150
Henheads	846	Slaidburn	1095
Higher Booths	1018	West Bradford	1074
Newsholme	827	Yate and Pickup Bk	984

same basis for Beaujolais in 1851. The same pattern is clear in both

Table 7.10 Sex-Ratios: Beaujolais 1851.

Affoux	1009	Mardore	929
Amplepuis	955	Marnand	865
Bourg de Thizy	977	St Clement	1039
La Chapelle	988	St Jean	907
Cours	932	St Lager	1070
Cublize	926	St Georges	914
Dracé	1015	Tarare	956
Joux	1071	Thizy	907

regions: the ratio of males to females varies as a function of the

percentage of the population in agriculture or industry. The relationship between surpluses of females and degree of invdvement in non-agricultural activities was analysed using the Spearman Rank Correlation. The data contained in table 7.10 were found to be significant at the 95 percent confidence level (+ 0.65). This relationship is even more apparent in table 7.11 where sex-ratios in the cantons of Thizy and Tarare are given for 1872.

Table 7.11 Sex-Ratios: Cantons of Thizy and Tarare 1872.

Thizy		Tarare	
Cours	992	Ancy	1102
Chapelle	967	Darieze	1039
Mardore	958	Dième	931
Marnand	1007	Joux	1003
St Jean	949	Les Sauvages	1191
Bourg de Thizy	928	Pontcharra	941
Thizy	902	St Apollin'e	1000
		St Forgeux	1039
		St Clement	910
		St Loup	1034
		St Marcel	1066
		St Romain	966
		Tarare	841
		Valsonne	1089

The communes of the canton of Thizy were all primarily dependent on the domestic textile industry and all, except Marnand, show substantial surpluses of females. The decline of population at Marnand 1851-72 (from 1155 to 1102) suggests a considerable out-migration which probably accounts for the preponderance of males. The most industrialized and urbanized commune - Thizy - significantly had the largest surplus of females. In the canton of Tarare a parallel situation is seen in the commune of Tarare itself. Tarare was easily the largest urban centre in Haut Beaujolais (1872 - 13,694) and its rapid growth from 1836 onwards is almost entirely due to the development of the factory-based muslin and silk industries attracting large numbers of migrants from surrounding rural areas. However, most communes in the canton though occupying some of the most marginal land in the departement, were primarily dependent on agriculture, and in

consequence have clear surpluses of males. This phenomenon is almost certainly explained by out-migration of females from areas of predominantly male employment, to centres such as Thizy and Tarare which offered better scope for female employment in the new mills and factories.

The same pattern is discernible in Rossendale and the Pennine fringe areas of Lancashire and the West Riding. Townships situated in the latter areas and whose economy was geared to agriculture and weaving show surpluses of males. This probably reflects the recent but very rapid decline of handloom weaving. Female employment outside domestic industry, was, as in Beaujolais, insignificant, and it is therefore difficult not to conclude that the depopulation of such townships which began steadily after 1831, represented an emigration of females in search of employment in the industrial areas of North East and South Lancashire. By comparison, most townships in Rossendale in 1851 had surpluses of females. Rossendale was overall an important area of in-migration, particularly the valley townships such as Over Darwen, Newchurch and Haslingden, which first accommodated water powered, and later steam powered industry. It is not surprising therefore to find that these townships had surpluses of females. In the rural-industrial townships of Rossendale, where even at this late date the domestic industry had some importance, we find surpluses of females in contradistinction to the Pennine fringe areas where sex-ratios were imbalanced in favour of males. This distinction is not easily explained because all rural-industrial townships were suffering some degree of net migrational loss in 1851. However, the economies of rural-industrial townships in Rossendale were more clearly weighted in favour of industry than those in the Pennine fringe areas. This being so, the decline of handloom weaving in Rossendale was probably just as likely to hit males as well as females. As a result

migration from these townships would not be sex selective.

(7.5) Population Change: Central Lancashire 1831-51: Beaujolais 1841-72.

Figures 7.1 and 7.2 show the spatial distribution of population change in Central Lancashire 1831-51 and Beaujolais (i.e.arrondissement of Villefranche) 1841-72. We have already seen that fertility levels in Britain and France declined considerably during these periods. As mortality rates did not fall with the same magnitude, the middle decades of the 19th century were characterized by a deceleration in the rates of natural increase. Population growth in Britain 1831-51 was 25.9 percent. As Britain's population system at this period can virtually be regarded as 'closed' (the losses and gains due to international migration being negligible), practically the whole of this growth can be regarded as natural increase. Rates of natural increase in France were more modest. Although the population of the Rhône increased by 28 percent 1841-72, from 523,000 to 674,000, only 8 percent of this growth was accounted for by natural increase.[10] The remainder was derived from heavy in-migration, particularly into the city of Lyon. The magnitude of the decline in fertility and the increased importance of migration can be appreciated by comparing these figures with those for the period 1801-41: in this period the population of the Rhône increased by 43.1 percent of which only 10.1 percent was accounted for by immigration. Many communes in the departement in the 60's and 70's experienced the unusual phenomenon of natural decrease of their populations.

It is possible to classify the areal units of figures 7.1 and 7.2 according to the degree to which they were affected by migration. In the case of Lancashire, townships showing population increases of the order of 1 to 25 percent were probably suffering some net

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10 Arminjon ibid.

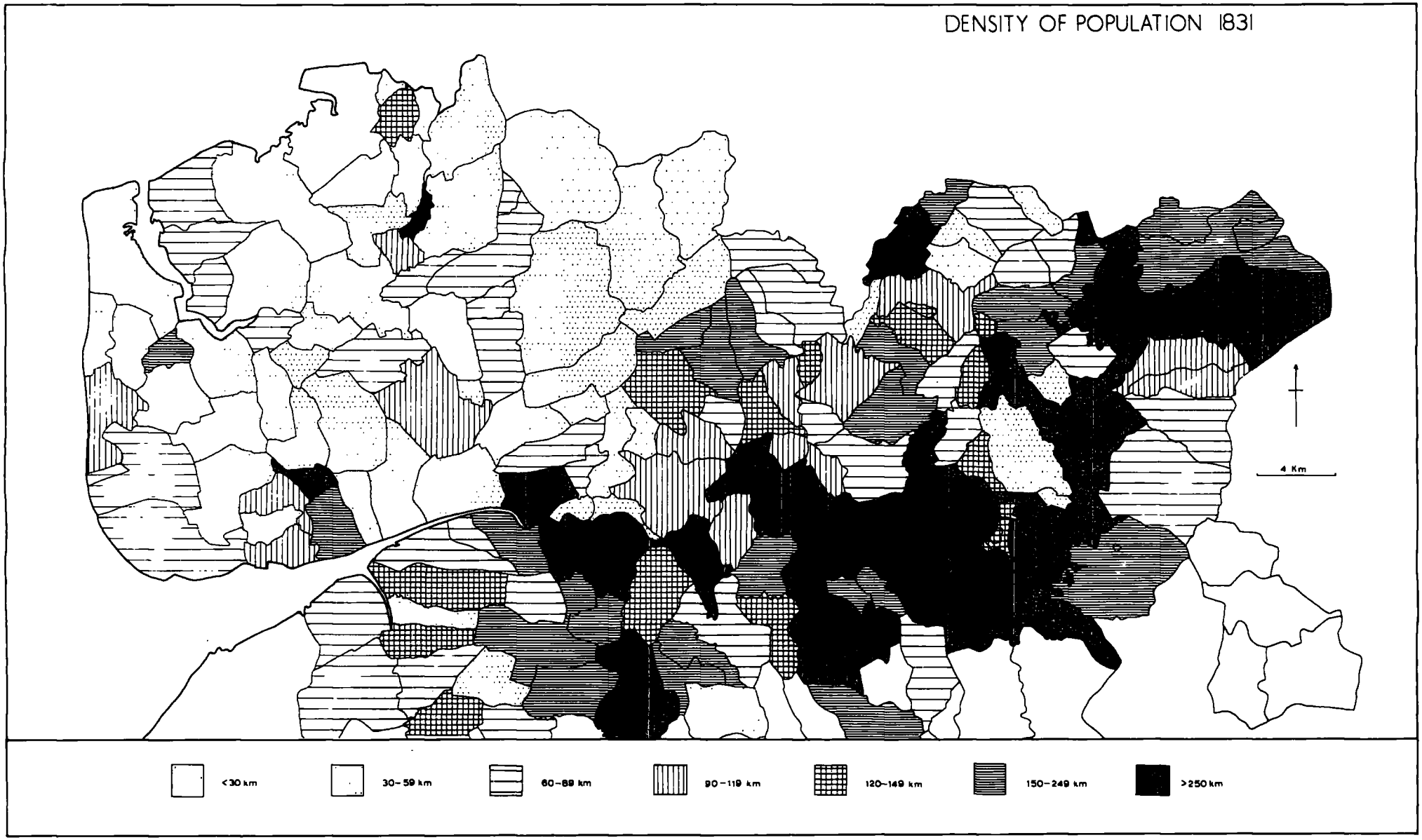
DENSITY OF POPULATION 1831
4 Km
<30 km
30-59 km
60-89 km
90-119 km
120-149 km
150-249 km
>250 km

Figure 7.8

migrational loss. If we assume that natural decrease was not a phenomenon found in Lancashire at this period, then townships showing absolute population declines were almost certainly suffering heavy net migrational losses. Equally, townships with growth rates of 25 percent and above undoubtedly experienced net migrational gains. In Beaujolais the very low rates of natural increase around mid-century make difficult any unequivocal statement about the influence of the migrational factor. Any commune that underwent population growth 1841-72 could not with certainty be said to have suffered a net migrational loss of population. Nevertheless, those communes that experienced an absolute population decline during this period most certainly were supplying substantial numbers of migrants to nearby urban-industrial areas. In the same way, growth in excess of 25 percent is almost certainly indicative of considerable in-migration. The details of population change in each region will now be considered, with particular emphasis on the major economic divisions of Rossendale and Beaujolais vz. rural-industrial; urban-industrial; agricultural.

(1) Central Lancashire: in chapter 4 it was shown that the areas of most rapid population growth 1801-31 were the expanding industrial towns of the Rossendale and Calder-Darwen valleys, and the towns of Preston and Chorley on the Lancashire Plain. Population growth in rural-industrial areas was largely the result of natural increase, whereas agricultural areas often suffered below average growth because of net migrational losses. Between 1831 and 1851 the rate of population growth fell markedly. However, areas of in-migration were the same as those in the preceding period - i.e. those areas where industrialization and urbanization were proceeding most rapidly. One new area which showed accelerating growth was the Fylde coast with the development of a skeletal rail network. In addition, a handful of market towns (e.g. Leyland, Garstang) were affected by small scale

industrialization and began to show rapid growth. The major development in the spatial pattern of population change at this period was the greater geographical extent of areas suffering net migrational loss. These areas, which can be regarded as townships experiencing growth of less than 25 percent, covered large districts of the Fylde, where indeed depopulation had been taking place for 30 or 40 years, and where by 1851 more than half the townships had suffered absolute population declines. Other areas of severe depopulation were the districts north-east of Preston towards Longridge; the Ribble Valley and the townships bordering the Ribble estuary; and the northern fringes of the Plain of Lancashire. All of these areas were predominantly agricultural, and most were areas of out-migration in 1831. An important change at this period was the migrational losses suffered by many rural-industrial townships. Townships which previously had maintained a steady population growth as a result of the flexibility of the domestic textile industry in absorbing the surplus population of natural increase, now found themselves supplying a stream of migrants to neighbouring urban-industrial areas. The severity with which the collapse of the handloom weaving industry hit these areas can be gauged from the fact that between 1831 to 1851 the Rossendale townships of Tockholes, Yate and Pickup Bank, Eccleshill, Livesey, Higher Booths, Edgeworth and Musbury all experienced absolute population decline. Figure 4.3 shows rural population change 1801-51 in townships that were primarily involved in the domestic textile industry. The chronology of decline of this type of economy suggests 1831 to have been a decisive turning point in a demographic sense. After 1831 the whole basis of the handloom weaving industry was undermined, leaving little alternative to emigration from these areas of low employment potential. Out-migration was particularly heavy from the rural-industrial townships of the North East Lancashire-West Riding border.

Occasional comments in the printed census abstracts leave little doubt of the causes of depopulation. At Slaidburn in 1851 it was "in consequence of the depressed state of handloom weaving (that) many families (had) removed to other districts." In the sub-district of Clitheroe[11] population decline is explained by "the want of employment...having induced many families to remove into the manufacturing districts", while at Gisburn "the substitution of steam power for handloom weaving" was held responsible.

(2) Beaujolais: in the period 1801-41 the industrial revolution made little impact on rates of population growth in the arrondissement of Villefranche. Areas of least growth were the central mountainous districts of Haut Beaujolais, where the difficulties of farming in a harsh environment encouraged the out-migration of the surplus population of natural increase. Areas subject to little or no net-migrational loss were the textile region of Haut Beaujolais and the richer agricultural areas, especially Bas Beaujolais and the Côte. There were few areas of net migrational gain, though the early establishment of spinning factories at Tarare had stimulated extremely rapid growth. The most striking feature of figure 7.1 is the very low rates of population increase 1841-72. Well over half of all communes suffered absolute population losses, and only seven showed growth of more than 25 percent. The immediate conclusion is that the region was predominantly one of net migrational loss, with very few areas actually experiencing net gains. Areas which suffered little to no net migrational loss included the viticultural communes of the Cote as well as a number of communes in the valleys of the Azergues and Turdine. Losses were again widespread from the central mountainous districts and from the communes bordering the Saône. As in Rossendale and East Lancashire 1831-51, areas engaged in the domestic textile industry showed

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11 The sub-district of Clitheroe included the following townships: Bashall Eaves, Waddington, Grindleton, and West Bradford.

net migrational losses for the first time. Real population declines took place in many rural-industrial communes in the cantons of Thizy and Tarare. The general observations of the census officers of the 1851 census although frequently neglected and where available often giving only superficial information, nonetheless give some insight into the wide variety of factors producing population change at this period. Population decline at Marnand for instance was attributed to 'la misere'; at St Jean-la-Bussière to unemployment in spinning; while at Amplepuis we are simply told that "many families have left the commune to go to Tarare and Roanne." In predominantly agricultural communes out-migration to neighbouring urban centres was the main cause of population change. At St Marcel d'Éclaire emigration to Tarare took place because of the distressed state of agriculture. At Valsonne the fall in population is accounted for by emigration to Tarare, and at Affoux, where there was a slight increase in population between the censuses of 1846 and 1851 we are told there was an increase in births and a reduction of out-migration. This last example serves to emphasise that even in comparatively small regions the causes of population change are often quite varied.

Communes which clearly experienced net migrational gains include the urban-industrial centres of Thizy and Cours. The mechanization of the textile industry attracted migrants into these areas, the first being long established and producing above average increases in the communes of Thizy and Bourg de Thizy, both of which shared the urban area of the town of Thizy. Industrial development at Cours and in the valley of the Trambouze in the new commune of Pont Trambouze was centred around the manufacture of woollens and blankets.[12] By 1885 this industry had become fully mechanized. The declining population

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12 The commune of Pont Trambouze was created in 1876 from part of the area of Cours, Mardore and Bourg de Thizy.

of Tarare at this period is particularly remarkable in view of the extremely rapid growth which occurred earlier in the century (population growth 1811 to 1851 was 4,700 to 10,280). The first signs of the decline of this industrial centre which are evident in the population figures of 1872 are in many respects symptomatic of the difficulties of achieving continuity in an industrial region where prosperity formerly depended on resources of water power, and which contained no local resources of coal to effect the smooth transition to steam powered industry. This problem, first appearing in the second part of the 19th century was never fully solved even in the present century, and for the last 100 years or so the industrial region of Haut Beaujolais has stagnated. Table 7.12 illustrates this point, showing that before the close of the 19th century the chief urban-industrial centres of the region were in most instances suffering population decline. The isolation of Haut Beaujolais was the principal factor in this trend. Lack of local supplies of coal can entirely explain the decline when regions similarly placed, but having the advantage of excellent communications (e.g. Lyon, Roanne) continued to develop and expand.

Table 7.12 Population Change: Urban-Industrial Communes 1866-1901.

	1866	1886	1901
Tarare	15,092	12,280	12,334
Amplepuis	6,640	7,274	7,097
Thizy	2,801	4,537	4,797
Cours	4,872	6,246	5,494

By comparison, industrial stagnation only became a feature of the urban areas of Rossendale after the war of 1914-18, and nowhere did it induce population loss and demographic decline of the type apparent in Haut Beaujolais in the later part of the 19th century.

(7.6) Conclusion: population changes in Rossendale and Haut Beaujolais were strongly influenced by national demographic trends in the middle decades of the 19th century. This was a period of declining fertility

both in Britain and France. This process was clearly operating in Rossendale and Haut Beaujolais and is one of the principal causes of changing age structure in the two regions. The effect of this trend was to produce an ageing of the population at the base of the age-sex pyramid and reduce the percentage of the total population in the age group 0-14 years. At the same time the young and older adult age groups increased their percentages of the total population largely through the natural ageing process and the movement of children born 20 to 40 years before in the period of high fertility into the middle age groups. In addition there was a general increase in the percentage of the population aged 60 and over owing to fall in mortality which mainly affected the older age groups. Rural areas tended to have more youthful populations because of their higher fertility compared to urban areas. Large influxes of migrants into urban areas ,however, went some way to evening-out this disparity.

Declining fertility led to rates of population growth considerably below those of earlier decades. In the département of the Rhône fertility fell to such an extent that in the 1860's and 70's natural decrease was a feature of several communes. Migration assumed greater significance than in previous periods, though in this respect the mid-19th century can be seen as a continuation of trends which extend well back into the 18th century. In the period 1801-31 in Central Lancashire, and 1801-41 in the arrondissement of Villefranche, the only areas to suffer substantial net migrational losses were those primarily engaged in agriculture. However, by 1851 in Lancashire, and 1872 in Beaujolais, the rural-industrial areas were beginning to suffer net migrational losses, which in most instances expressed themselves in absolute population declines. The areas that continued to gain population as a result of both natural increase and net migrational gains, were the urban centres. Yet even these areas were not

immune to population loss for the new industrial centre of Tarare achieved its maximum population in 1851. The effect of migratory movement was to produce marked imbalances in sex-ratios between and within individual townships and communes. Agricultural areas which provided limited employment opportunities for women usually had surpluses of males of the order of 5 to 10 percent. The rural-industrial areas on the other hand had preponderances of females in the ratio we might expect in a normal population. The urban-industrial areas by comparison usually had large surpluses of females owing to their high potential for female employment in factories and domestic service.

In the final chapter further aspects of the spatial characteristics of the populations of Rossendale and Haut Beaujolais will be considered both in their local and regional contexts. In particular the parameters of population density and distribution, migration and settlement will be analysed for the middle decades of the 19th century.

Chapter 8: Population Density, Distribution, Migration and Settlement in the later Censal Period.

(8.1) Population Density: the important economic changes taking place in the first half of the 19th century are reflected in changing areal patterns of crude population density (figures 7.7 and 7.8). Just as the density maps of 1801 were a summation of socio-economic processes operating throughout the pre-industrial period, so the maps of Central Lancashire (1831) and Beaujolais (1840) summarize economic and demographic change in the equally important phase of early industrialization in the two regions.

The early development of the factory system and the process of urbanization implied a movement of population into the industrializing centres. In Lancashire the new industrial centres were clearly discernible in 1801, and by 1831 they stand out as a great belt of high density extending eastwards in an arc from Preston along the Calder-Darwen and Irwell valleys (fig.7.8). By comparison, Beaujolais in 1801 was unaffected by the factory system and the highest densities were associated with rural-industrial communities in Haut Beaujolais and the rich viticultural areas of the Côte (fig.5.4). However, by 1840 the momentum of industrial change was apparent, with the textile region of Haut Beaujolais distinguishable by its relatively high densities, particularly in the rapidly growing industrial centres of Thizy and Tarare.

In Lancashire in 1831 the collapse of the domestic textile system was imminent though the rural-industrial communities of the Rossendale Massif were as yet unaffected by economic change. Consequently population density in the rural-industrial townships in the period 1801-31 shows a general increase which is in proportion to rates of natural increase. Typical rural-industrial townships with

crude densities of 90-119 km^2 in 1801 had densities of the order of 120-149 km^2 in 1831. Population densities in agricultural townships showed little change: densities in important agricultural areas such as the Fylde and the Lancashire Plain to the south-west of Preston, remained steady at around 30-50 persons per $kilometre^2$. Similarly in the central mountainous areas of Beaujolais population density showed little variation in the period 1801-40. This was an area of low density with adverse physical factors inhibiting dense rural settlement and relative isolation making the area unattractive to the textile industry. The most densely populated parts of Beaujolais in 1840 were likewise the areas of densest population in 1801 i.e. the textile region of Haut Beaujolais and the communes of the Côte. Densities were particularly high in the new urbanizing centres of Thizy and Tarare, which in many respects were paralleled by Rossendale townships such as Haslingden and Newchurch in the early years of industrial development.

Two principal conclusions emerge from comparison of density maps for the two regions for 1801 and 1831/40:

(1) the patterns of 1801 are more or less repeated at the later date.

(2) differences in density between areas within the two regions were accentuated during the first three or four decades of the 19th century.

We can regard the patterns of 1801 as largely pre-industrial, representing processes operating during the preceding 150 years or so. However, by the middle decades of the 19th century, density patterns had become sufficiently modified to be regarded in part, as the product of a new economic system. It is thus apparent, in spite of certain economic discontinuities, that there was marked continuity

in population distribution and density from the pre-industrial to the industrial period in both regions. Furthermore the density patterns established in the third and fourth decades of the 19th century are essentially the same patterns found in the regions today. This permits the following, tentative generalization: areas that were attractive to settlement and had the highest densities in the pre-industrial period have remained in large measure the areas of highest density today.[1]

The increasing geographic concentration of population in the period 1801-31/40 is evident from the Lorenz curves of the arrondissement of Villefranche and the parishes of Blackburn and Whalley in 1841 and 1831 respectively (fig.5.5b). Both curves show increasing concavity and a reduction in the value of the Gini Coefficient, indicating greater concentration and uneveness of population distribution. The rural-urban migratory movements of the period meant that agricultural areas remained relatively sparsely populated, while industrial areas, already the most densely populated areas, became even more densely populated.

(8.2) Migration: in Britain the first reliable data on place of birth are not available until the census of 1851. This is particularly unfortunate as the great movement towards industrialization and urbanization had been in full swing for at least 20-30 years, and by mid-century most urban centres had passed their peak of population growth. In France the first data only become available with the 1872 census, and, as in Britain their relative lateness reduces their value.

Place of birth data have been abstracted from the 1851 and 1872 censuses for Rossendale and Haut Beaujolais respectively. The size of samples varies between townships and communes and have been

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[1] Cf page 124.

collected on a systematic basis (see appendix). In order to obtain a more realistic picture of population movements only the places of birth of heads of households, husbands, wives, lodgers and servants have been considered. This has the effect of inflating the overall magnitude of movement but is a more realistic measure than consideration of the entire population as most migrants were either single persons or young married couples with uncompleted families (i.e. most of their children were subsequently born in the township or commune to which they had migrated).

Inevitably the data pose problems: in spite of instructions to the contrary, enumerators of the 1851 census in Rossendale frequently neglected to name the township of those born outside the home county. With regard to long-distance migration this is not a serious problem, but in Rossendale a good deal of short-distance migration was from the nearby West Riding. Schedules that simply define place of birth as 'Yorkshire' are therefore of limited value, and for this reason in the analysis of long-distance migration no distinction is made between those born in Yorkshire and the home county, Lancashire. In the French material this specific problem is not encountered, the precise instructions given to the mayors being effectively carried out.[2]

(1) Short-Distance Migration: migrational data relating to short-distance movements are given in tables 8.1 (below) and 8.2 (overleaf).

Table 8.1 Haut Beaujolais: 1872 Migration.

	- 10 km	10-19 km	+ 20km
Bourg de Thizy	.78	.14	.08
Cours	.80	.08	.12
La Ville	.86	.03	.11
Mardore	.87	.09	.04
Marnand	.76	.12	.12
St Jean-la-Bussière	.83	.11	.06
Thizy	.82	.07	.11

2 "On indiquera dans cette colonne la nationalité de chaque individu et le lieu de sa naissance. Si l'individu est né en France on indiquera la commune et le dépatement." 1872 Census. Instructions for column 16.

Table 8.2 Rossendale 1851: Migration.

	- 10 km	10-19 km	+ 20 km
Belthorn	.96	.02	.02
Cowpe, Lench etc	.65	.16	.19
Eccleshill	.86	.07	.07
Haslingden urban	.70	.10	.20
" rural	.79	.11	.10
Higher Booths	.72	.12	.16
Lower Booths	.62	.19	.19
Lower Darwen	.88	.06	.06
Musbury	.85	.11	.04
Newchurch	.73	.12	.15
Over Darwen	.76	.09	.15
Tockholes	.94	.03	.03
Yate and Pickup	.89	.07	.04

It is clear from tables 8.1 and 8.2 that short-distance migration was of overwhelming importance in the urbanization process in both regions.[3] In chapter 7 it was shown that redistribution of population under the influence of economic change was already quite advanced in Central Lancashire by 1831, with agricultural and rural-industrial townships on the margins of the manufacturing areas losing population. A similar trend is apparent in Beaujolais 1840-72, though there it is masked by very low rates of natural increase with occasional natural decrease owing to abnormally low fertility.

Short-distance migration in Lancashire was stimulated by better employment prospects in the urban-industrial centres as well as the 'push' factor involved in the collapse of the handloom weaving trade. In Haut Beaujolais the handicap of isolation and comparative inaccessibility, as well as the difficulty of making the transition from water to steam powered machinery, meant that economic disparities between rural and urban communes were less pronounced. As a result, the decline of the domestic textile industry only became a serious problem towards the close of the 19th century. Although small industrial towns such as Thizy, Amplepuis and Cours were attracting substantial numbers of migrants in the period 1840-72, the overall magnitude

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3 K.L.Wallwork comes to the same conclusion for the manufacturing districts of the Calder-Darwen Valley at this time. See K.L.Wallwork: "The Evolution of an Industrial Landscape: the Calder-Darwen Valley Lancashire c1740-1914." unpub. Ph.D. thesis Univ.of Leicester 1966.

of movement was in no sense comparable with that in Lancashire at this time. It must also be remembered that the industrial region of Haut Beaujolais was merely a sub-region within the neighbouring hinterlands of towns such as Lyon, St Etienne and Roanne. The economic attractiveness of such towns was proportionately greater than those of Beaujolais, a fact which became particularly obvious with the decay of water powered industry. Thus long-distance migration into Beaujolais never assumed any real importance, while the attractiveness of the regional capital, Lyon, almost certainly played a leading role in the net migrational losses suffered by the urban-industrial communes of Haut Beaujolais in the late 19th century.

In Lancashire, the industrial revolution can be viewed through the simple model of the redistribution of existing population over a period of 70 to 80 years. In Beaujolais, changes in the pattern of population distribution are not so clear though there is sufficient evidence to indicate this applicability of this model. However, the processes of industrial change were weaker as industrial development occurred on a smaller scale and competition and inaccessibility seriously hampered economic growth. The predominance of short-distance migration in the urbanization process is unquestioned, a fact that Redford[4] pointed out nearly 50 years ago in the context of Lancashire. In the urban-industrial townships of Rossendale the percentage of the population born within 20 kilometres varies from 81-85 percent, and by far the greatest proportion of the residual population were born either elsewhere in Lancashire or else in Ireland. It would seem reasonable to consider population in Lancashire during the pre-industrial and industrial periods as belonging to a closed system with precise spatial boundaries. In East Lancashire there was marked

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4 A. Redford: "Labour Migration in England 1800-1850." 1926 2nd ed.1964.

continuity between both periods viz:

(i) high density rural settlement based on domestic industry and giving a dispersed pattern in the pre-industrial period.

(ii) collapse of the domestic system and its replacement by the factory system leading to a redistribution of population and in particular a polarization of urban development in the valley townships. The pattern in Beaujolais is similar though rather less pronounced.

An important qualification must be made to the above generalizations: the total population of Lancashire grew faster than any other county in the period 1801-51, and as this growth is not attributed to significantly higher fertility there must have been an appreciable in-migration from outside the county. However, it is important to stress that the scale of such movements was small compared to the volume of short-distance migrants.

Examination of tables 8.1 and 8.2 reveals that the percentage population born within a radius of 20 kilometres of place of residence was greater in rural than in urban areas. This, of course, is the normal situation with tendency to migrate related to employment opportunities in place of residence. In 1851 in Lancashire, and 1872 in Haut Beaujolais it is obvious that employment opportunities were greater in urban areas. To quantify the relationship between job opportunity and propensity to migrate, townships in table 8.2 were ranked according to their percentage of total populations engaged in agriculture, and the proportion of their populations born outside a radius of 20 kilometres of the townships. Using the Spearman Rank Correlation an R value of + 0.89 was obtained which with two degrees of freedom proved significant at the one percent level. The small size of the Beaujolais sample precludes analysis of this type though there is no reason to suppose that the same relationship does not exist. The power of centres such as Thizy and Cours to attract migrants

from further afield was less than their counterparts in Rossendale. However, by 1872 population growth in Haut Beaujolais had passed its peak and indeed rather than an area for the reception of migrants, the region was already supplying a steady outward stream to surrounding industrial regions. The initial locational advantages of the factory industry in Haut Beaujolais were obsolete long before the end of the century and the adoption of the new steam powered technology was only accomplished with difficulty.

(2) Long-Distance Migration.

(i) Irish In-Migration into Lancashire: Redford[5] has already considered in detail the evidence of 19th century in-migration into the industrial districts of North West England. His principal finding that in-migration was predominantly short-distance in nature, with no massive movement of population from southern to northern England, is generally taken as being definitive[6] though based only on the printed abstracts of the 1851 census.

Irish immigration was the most important long-distance migration current into the manufacturing districts of Britain in the first half of the 19th century. In-migration into Lancashire was particularly heavy partly because of its accessibility and partly because of the employment opportunities in the textile industry. The Irish monopolized the lower grades of work and in addition were often engaged in hawking and petty trading. Immigrants concentrated in the large towns, especially Liverpool and Manchester, though they were also widely distributed throughout East and Central Lancashire. In-migration grew particularly heavy in the 1840's following the 'Potato

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5 Redford 1926 op.cit.

6 This conclusion has recently been questioned by Professor I.Leister of Marburg (personal communication).

Famine'. In this period of high mortality over one million people emigrated from Ireland. The 1851 Enumerators' Schedules for Rossendale reveal a considerable Irish population in the region centred on the main urban areas. A large proportion of the immigrants shared accommodation, often with other Irish families,[7] and compared with the rest of the population lived in conditions of extreme overcrowding in the central areas of Haslingden, Over Darwen and Bacup.

(ii) Long-Distance Migration into Rossendale: table 1 (see appendix) shows absolute numbers of immigrants into Rossendale with respect to county of origin. Irish immigration was more important than that of all other counties in Britain. The Ridings of Yorkshire were not included in table 1 because of (1) the proximity of the Yorkshire border to Rossendale and (2) the imprecision of place of birth data i.e place of birth is often referred to as 'Yorkshire', the exact township enabling us to locate the Riding not being given.

A simple interaction (gravity) model was assumed in the analysis of data in table 1, the number of migrants being proportional to distance (i.e. crude physical distance) and the population of the county of origin:

$$M = \frac{P}{d^n}$$

Migration is proportional to some exponent of distance.

The defects of such a model with regard to the measurement of distance and the tendency to migrate by crude population totals are obvious and have been discussed at length elsewhere. Counties were ranked according to the number of immigrants supplied. Then using the above formula counties were similarly ranked and the differences between the actual and theoretical values calculated. Counties with a positive score were supplying fewer migrants than might be expected were migration simply a function of total population and distance. Alternat-

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	Irish Heads Families + Wives	Irish Lodgers
Haslingden	17	15
Bacup	6	8

-ively counties with a negative score were supplying more migrants than might be expected. The Spearman Rank Correlation Coefficient of + 0.45 suggests a positive relationship between actual and expected migration, though one which is not highly significant. However, there are several gross deviations from the theoretical values which require further explanation. The most important are:

Lincolnshire	+ 20
Durham	+13
Buckingham	- 21
Westmorland	- 18
Suffolk	- 17

The East Anglian counties of Norfolk and Suffolk both show marked negative deviations from the theoretical values. This is particularly surprising in view of Lincolnshire's positive score - a county of similar economic background in close proximity to East Anglia. Both Suffolk and Lincolnshire suffered substantial net migrational losses 1801-31,[8] and it therefore seems most likely that specific factors were operating. It is possible that one or two firms in the Rossendale area recruited labour from the agricultural areas of East Anglia at this period, and that this has distorted the anticipated pattern given the simple assumptions of our model. In all only 74 persons migrated from Suffolk to Rossendale and such a small number could easily be accounted for by the activities of a single firm. In comparison it seems that Lincolnshire was not an area of labour recruitment for Rossendale entrepreneurs. Although physical distance is not great, east-west movements across the Pennine Massif were certainly more difficult than north-south movements at this period. In addition, Lincolnshire's low score can be accounted for by its relative location - the county would have naturally fallen within the hinterlands of the nearby manufacturing regions of the East Midlands and West Riding.

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8 Deane and Cole op.cit. p 115.

The higher than predicted score for Westmorland can probably be explained by the fact that Central Lancashire was the nearest and most accessible industrial centre of any size. Westmorland therefore fell within the sphere of influence of Lancashire and competing centres of lesser importance such as the West Cumberland coalfield. The anomalous score for Buckinghamshire is difficult to explain. However, the total numbers involved are small and indeed the movement of a single family could radically affect the overall score. Not too much significance therefore ought to be read into scores at the lower end of the scale where absolute numbers were not great. Finally, the low score of County Durham may be attributed to two factors: first its relative inaccessibility from Lancashire, and second the fact that it was an important manufacturing region in its own right, importing, rather than exporting substantial numbers of migrants.

Deane and Cole have classified English counties into three groups: A - agricultural; B - mixed; C - industrial. Group A suffered heavy net migrational loss throughout the period 1801-31; in group B there was little change; and in group C there was most often net migrational gain. Using this classification in the context of in-migration into Rossendale, the data reveal interesting information about migratory processes (table 8.3).

Table 8.3 Scores of Counties supplying migrants to Rossendale grouped according to Deane and Cole's Classification.

A		B		C	
-	+	-	+	-	+
7	4	6	7	1	5

Counties in group A tended to supply more migrants than was predicted by the model (which takes no account of economic differences between counties), while in group B there was no apparent trend. In contrast most industrial counties supplied fewer migrants than might have been expected from the model.

In conclusion, we can say that the two major factors involved

in the magnitude of in-migration into any region are distance and population. The correlation of the theoretical and actual figures is postive, though not highly significant. The underlying assumptions of the model approximate to the truth, but are not so accurate as to be entirely satisfactory. Thus in addition to the variables of distance and population, the following factors ought to be taken into account in obtaining a more detailed explanation of the migratory process:

(1) competition of rival industrial centres.

(2) accessibility/economic distance, and not simply physical distance.

(3) percentage of population in agriculture as the bulk of migration was rural-urban.

(4) specific factors such as recruitment of labour by entrepreneurs from the centre of in-migration. This factor is similar to that of 'information' in many studies of migration.

(5) propensity to migrate e.g. rural overpopulation.

(iii) Long-Distance Migration into Haut Beaujolais: the long-distance movement of population into Haut Beaujolais was certainly less important than similar movements into Rossendale. Table 8.4 shows numbers of heads of families, husbands, wives, lodgers and servants born outside the département of the Rhône, and the contiguous départements of the Loire and Saone-et-Loire.

Table 8.4 Long-Distance Migration into Haut Beaujolais.

Puy-de-Dome	15	
Allier	7	
Isère	3	Departements with a total of one: Yonne, Haute Savoie, Vendée, Meurthe-et-Moselle.
Italy	3	
Seine Maritime	2	
Paris	2	

It would seem unlikely that these figures differ substantially from those of a purely agricultural region at this time (1872). In-migration was small compared to Rossendale because industrialization was less

well developed and the rural-urban migration of population in South East France before the 1870's was on a comparatively small scale. With such small numbers involved in long-distance movements it is not possible to make meaningful generalizations. However, the Puy-de-Dome stands out as a region supplying unusual numbers of migrants at this time. Chatelain[9] has shown the importance of in-migration from Auvergne and the Massif Central to Lyon during the 19th century. In 1911 for example one third of the population of Lyon born outside the city were from the Massif Central. The principal causes of this migration were rural overpopulation and insufficient agricultural resources.

(8.3) Population Distribution: distribution of population in the period of the industrial revolution is analysed using the methods outlined in section 5.3(iib) (pp 127-131). The technique of quadrat sampling was applied to figures 8.2 and 8.3 using the same grid scale as in figures 5.6 and 5.7. The original maps on which figures 8.2 and 8.3 are based are the 'Carte Topographique du Rhône 1885'[10] and Greenwood's County Map of Lancashire, published in 1818. Analysis of figures 8.2 and 8.3 produced the following frequency arrays:

Haut Beaujolais 1885

X	f
0	28
1	20
2	30
3	24
4	27
5	27
6	17

Rossendale 1815

X	f
0	284
1	112
2	76
3	68
4	37
5	34
6	23

The Rossendale data have a mean value of 1.46 houses per quadrat and a variance of 2.12. The corresponding figures for Haut Beaujolais are 3.4 and 1.9 respectively. Mean-variance ratios are 0.66 and 1.78 for

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9 Chatelain 1954 op.cit. p 100.

10 Carte Topographique du Rhône 1885: 1: 40,000. Thizy 3PL 598 cl
Tarare 2PL 312 cl

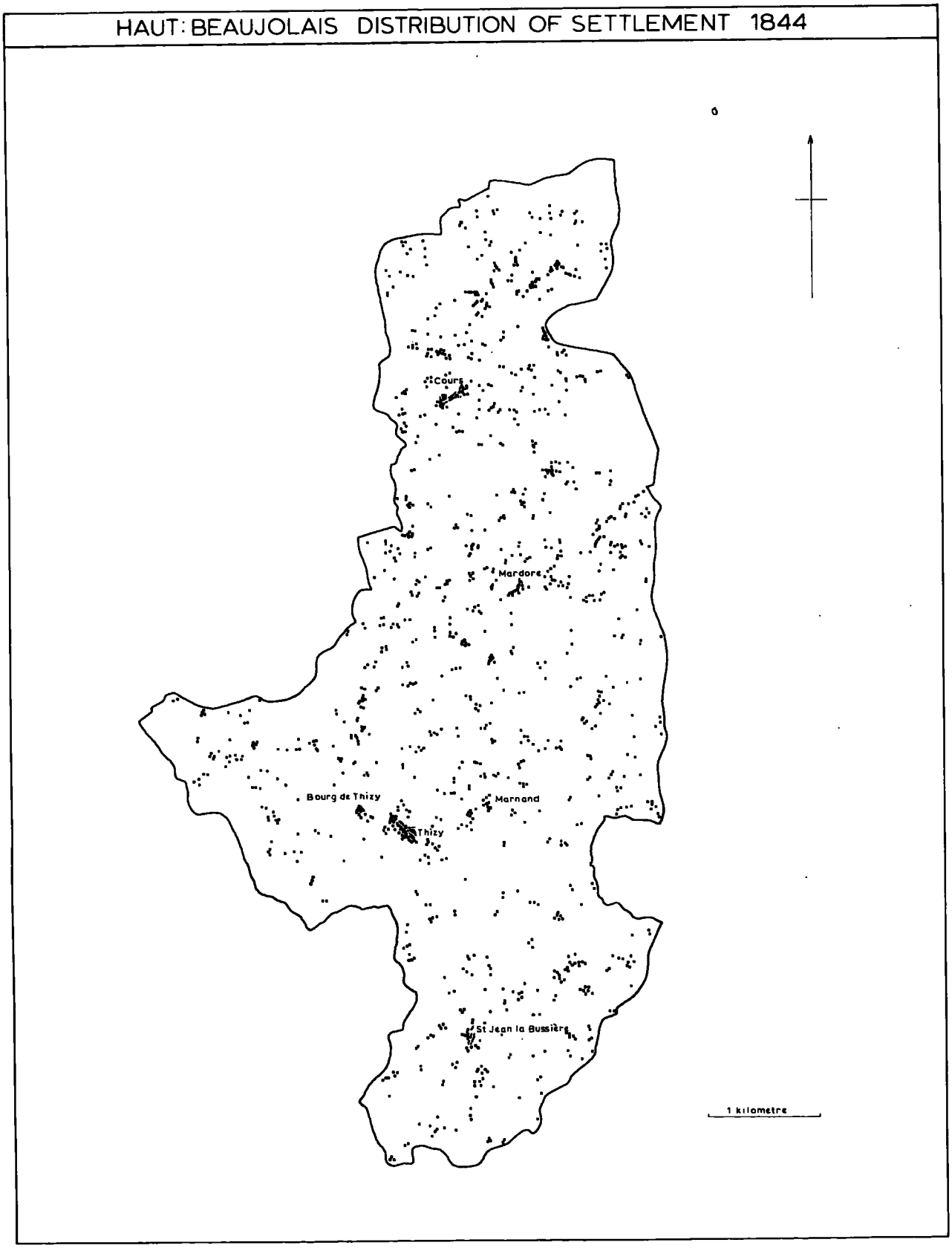
HAUT: BEAUJOLAIS DISTRIBUTION OF SETTLEMENT 1844
Cours
Mardore
Bourg de Thizy
Thizy
Marnand
St Jean la Bussière
1 kilometre

Figure 8.1

Rossendale and Haut Beaujolais respectively. In the period 1794-1818 in Rossendale, the variance-mean ratio showed an increase from 0.45 to 0.66, suggesting a reduction in the degree of uneveness of population distribution. This result at first sight is somewhat surprising in view of the operation of the process of urbanization which was tending to produce increasing agglomeration of population. However, we have already discussed the problems of accurately indentifying individual households in urban areas on fairly small scale maps, and this, together with the enclosure and colonization of large tracts of moorland towards the end of the 18th century probably account for this trend. The agglomerated pattern of settlement/population distribution in Rossendale in 1794 and 1818 is the normal pattern found in geographic distributions. In Haut Beaujolais we noted in section 5.3 the unusual feature of 'under-dispersion' or regularity of population distribution in 1813. The situation by 1885 shows no appreciable change and indeed the variance-mean ratio indicates a more regular distribution than in 1813. We have already considered the possible causes of this phenomenon, though in many respects it could be argued that Rossendale rather than Haut Beaujolais is anomalous. In Rossendale unusual physical factors coupled with the historical legacy of commonland enclosure conspired to produce a markedly irregular distribution.

(8.4) Settlement: statistical data relating to settlement in the two regions are available from the 1851 census manuscripts of England and Wales and those of the 1872 census in France. Although this is the first occasion on which hard statistical material can be applied to settlement study, its value is reduced by a number of factors which are particularly severe for the French data. The tabulated summaries of the 1851 census in France provide an apparently detailed breakdown of settlement distribution in each commune, suggesting the

that analysis of the settlement hierarchy at a small scale might be profitable. Unfortunately, comparison of these data with contemporary maps of the period reveals serious flaws which substantially reduce their value. A superficaial impression of these data is of a marked absence of isolated farmsteads in Haut Beaujolais - this in spite of strong indications that dispersion and under-nucleation were the dominant features of the settlement pattern of the region. However, it appears that the enumerators included the returns of isolated farmsteads with those of nearby hamlets so that they do not occur as being spatially distinct in the documents. Consequently, the 1851 census gives the misleading picture of a settlement hierarchy comprising a centrally placed nucleation of prime importance followed by a large number of hamlets, but without any third tier of isolated farmsteads. Individual settlements recognised by the census officers are thus an unreliable guide to the true pattern of settlement in the region.[11]

This problem is not encountered in the Rossendale censal material. The manuscripts list each discrete settlement from which it is necessary to aggregate the number of families in order to achieve some measure of population size. Size of population cluster is the principal criterion used in the discussion of the hierarchy of settlement which follows, and is defined in relation to the number of households or families per settlement.

The real value of the 1851 census in France lies in the distinction which is made between nucleated (population agglomeree) and dispersed (population dispersée) populations. This distinction was first made in 1851 and incorporated in subsequent censuses so that comparison of trends is possible for the period 1851-72. Definition of nucleated settlement amounts to no more than a distinction between

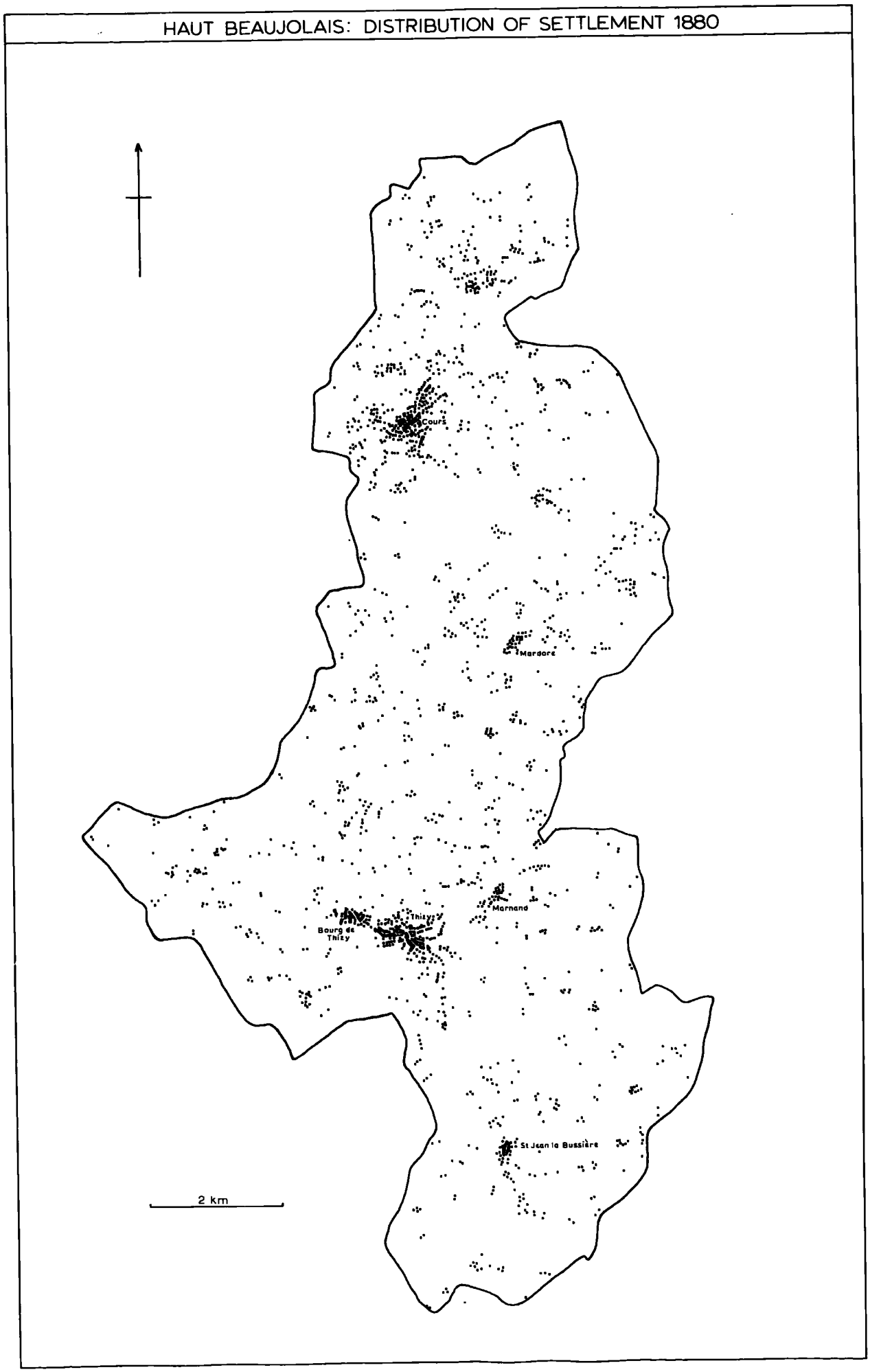
HAUT BEAUJOLAIS: DISTRIBUTION OF SETTLEMENT 1880
Cours
Mardoré
Marnand
Thizy
Bourg de Thizy
St Jean la Bussière
2 km

Figure 8.2

the 'bourg' and other settlements of less importance in the commune. Geographically the 'bourgs' are in fact well defined and in Haut Beaujolais dominate the settlement hierarchy at the communal scale. The definition of nucleated settlement can therefore be accepted without undue criticism. Table 8.5 shows the percentage of population in selected communes 1851 and 1872 concentrated in the 'bourgs'.

Table 8.5 Percentage Nucleated Population 1851 and 1872.

	1851	1872
Affoux	13.9	-
Amplepuis	37.8	-
Bourg de Thizy	28.4	33.6
La Chapelle-de-Mardore	9.4	14.2
Cours	38.8	53.1
Dracé	78.3	-
Joux	28.1	-
Mardore	8.4	10.3
Marnand	14.7	11.4
St Clement-sur-Valsonne	39.0	-
St Georges-des-Reneins	34.1	-
St Jean-la-Bussière	22.1	18.8
St Lager	63.2	-
Tarare	91.9	-
Thizy	100.0	93.1

Degree of nucleation according to the criterion of the 1851 and 1872 censuses is related to several factors. First the agricultural system: the areas of extensive grazing land in Haut Beaujolais support dispersed settlement with comparatively small percentages of the total population concentrated in the 'bourg' (e.g. Affoux, Mardore, Marnand etc). In contrast the arable and viticultural lands of the Cote and the Saone Plain have more nucleated populations with larger percentages of the population found in the 'bourgs' (e.g. Dracé and St Lager). Communes showing greatest nucleation are the expanding urban areas of Tarare, Thizy and Cours where concentration was being emphasised by the migration process. The settlement pattern outside the industrializing communes appears to have remained fairly stable in the period which covers the introduction of the factory system in Haut Beaujolais (i.e.1851-72). The three tier hierarchy from 'bourg'

to hamlet and isolated farmstead prevailed in rural areas. For the communes of Bourg de Thizy and La Chapelle-de-Mardore a clear distinction between isolated farmsteads and hamlets was made in the 1872 census and makes possible the detailed breakdown of settlement types seen in table 8.6 below:

Table 8.6 Settlement Hierarchy 1872. (number of families)

	Bourg de Thizy	La Chapelle-de-Mardore
Bourg	146	14
Hamlets	254	88
Isolated Farms	55	13

In the rural-industrial communes of Bourg de Thizy and La Chapelle-de-Mardore, the striking feature of the settlement hierarchy is the importance of the hamlet as the major unit of settlement. Thus some quantitative support is given to the cartographic evidence which enabled us to formulate the generalization in section 5.3 that the hamlet was the principal unit of rural settlement in Haut Beaujolais.

In 1851 statistical data on settlement size are available for the first time in Rossendale on a scale below that of the township. Data in table 8.7 give some indication of the size-distribution of settlement in Rossendale at this time.

Table 8.7 Size-Distribution of Settlement: Rossendale 1851.

	(family units)						
	1	1-2	3-4	5-8	9-16	17-32	+ 32
Cowpe/Lench/etc.	8	9	10	7	3	2	5
Eccleshill	-	2	6	6	2	1	-
Haslingden (rural)	21	21	20	16	8	1	2
Higher and Lower Booths	39	13	8	6	3	1	-
Musbury	16	9	9	3	3	1	2
Over Darwen	54	23	34	24	12	4	4
Tockholes	27	17	8	12	-	1	-

The sustained growth of population in all townships in Rossendale in the first 30 years of the 19th century led to a thickening of existing rural settlement and the development of urban agglomerations in the Darwen and Irwell valleys. In rural areas this thickening of settlement took the form of the addition of cottages to existing hamlets and the

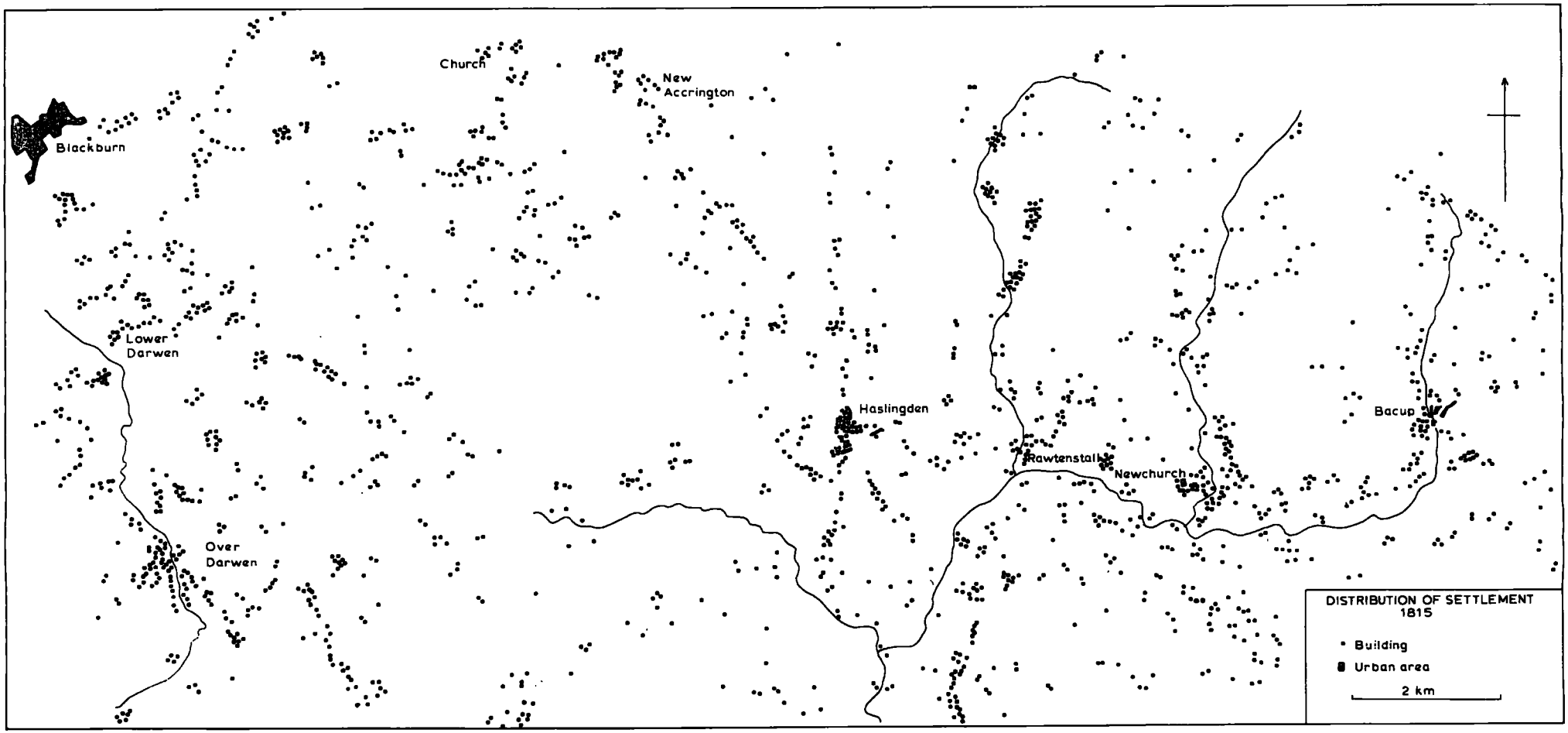
Church
New Accrington
Blackburn
Lower Darwen
Haslingden
Rawtenstall
Newchurch
Bacup
Over Darwen
DISTRIBUTION OF SETTLEMENT 1815
Building
Urban area
2 km

Figure 8.3

construction of cottage-rows either in existing settlements or more commonly on new sites along major routeways or at important junctions. Something of this process can be seen in a comparison of figures 5.16a and 5.16b in the development of the cross-roads settlement of Guide in Lower Darwen. Thus in rural areas the trends of the 18th century which favoured the establishment of small nucleations are emphasised in the early years of industrialization. The new high density patches of settlement usually contained between 5 and 20 families. At Eccleshill the cottage-row of 'Dandy Row' housed 18 families in 1851 and at the same time 'Treacle Row' at Yate and Pickup Bank housed 10 families. Such settlements rarely possessed service functions and although in a rural setting they had few affinities with agriculture. Table 8.7 shows the importance of small nucleations between village and isolated farmstead in the settlement hierarchy. There is a clear break in the size-distribution between the classes 5-8 and 9-16 families, emphasising the limited size of these population clusters. There was a tendency in certain townships for an increase in larger settlements comprising more than 32 families. Although discrete industrial villages were not common in Rossendale, fairly sizable nucleations such as Belthorn, Hoddlesden and Cowpe expanded rapidly during this period and were based almost exclusively on weaving, mining and quarrying. However, isolated farmsteads remained the most important form of settlement though the 1843 Tithe Map of Eccleshill shows that nucleated settlement based on agriculture was possibly not as rare as might have been supposed (fig. 5.12). In the small hamlet of Eccleshill Fold for example, farms cluster in the nucleus of the settlement and are not centrally placed in relation to their fields, though farm units are fairly compact with little fragmentation of holdings.

Finally it is impossible to discuss settlement in East Lancashire at this period without remarking on the changes caused by

the collapse of the handloom weaving industry. The decline of a form of economic organization that had dominated the regional economy for nearly 200 years had profound repercussions on the landscape, and in particular on settlement. Rural depopulation led to the decay of many settlements though there is no instance where the decline of rural industry resulted in complete desertion. However, empty houses are commonly recorded in the enumerators' schedules of 1851. At Scole's Fold and Woodhead (Yate and Pickup Bank) 4 out of 13 and 4 out of 11 houses respectively were empty in 1851. At Gambleside (Higher Booths) half of the 8 houses were deserted and at Slate Pits (Haslingden) 4 out of 18 houses were abandoned in 1851. In these settlements the degree of depopulation was greater than elsewhere, but generally in most rural settlements in Rossendale in 1851 one house in 6 lay empty. The most extreme example is that of Grane Head on the high moorland plateau separating the Darwen and Irwell drainage basins. Here in 1851 all 8 houses which comprised the settlement were deserted. However, depopulation of this severity is almost certainly attributable to the forced movement of people owing to the demands of water boards for water catchment areas.

The legacy of the domestic textile industry is still to be seen today in the narrow valleys and moorland areas of Rossendale and East Lancashire in the numerous small hamlets of gritstone cottages. It is evident, even to the untrained eye that such settlements have little relation to agriculture. Elsewhere in Britain and Western Europe where rural industry dominated the local economy the relationship between settlement and the land might be more subtle - certainly in Haut Beaujolais the effects of industry are less obvious, except perhaps in the density of population in a region of limited agricultural potential. Rural industry has had an important and enduring influence on settlement patterns throughout Europe and offers a major

field for research for settlement and historical geographers in the future.

Conclusion

The conclusions of a study of this type fall clearly into two categories: first those which have significance only within the context of the two study areas, and second, those which have a wider, more general significance. We began, at the outset, by discussing the problems of deriving generalizations on the basis of findings in two small regions. The study has shown that although there is considerable scope for comparison between Rossendale and Haut Beaujolais, there are, at the same time, important differences. These suggest the need for further study of this type of region before a full understanding, and truly valid generalizations can be achieved.

In a study concerned with population both in time and space during a period of remarkable economic change, the question of continuity inevitably presents itself. Of particular interest is the continuity from one economic system to another of the following elements: (1) population growth (2) population density (3) population distribution (4) settlement. Population growth is a fairly reliable indicator of the economic processes operating in a given community at a given time. It is therefore highly significant that in the context of our two study areas that groups engaged in the domestic textile industry should have experienced vigorous population growth a century or so before the industrial revolution, whereas their agricultural counterparts showed little tendency towards change. The precise mechanism of growth is far from clear, though the largest proportion can probably be accounted for by the employment opportunities provided by rural industry permitting the retention of the surplus population of natural increase, in situ. Differential fertility and some in-migration were probably also important in Rossendale.

Population growth from the early 18th century onwards produced abnormally high population densities in rural-industrial

townships and communes. The generalization that areas engaged in rural industry stand-out in the 18th century as areas of above average density of population is one which is worth testing in the context of other regions.

If there was continuity in population growth and density between the pre-industrial and early industrial periods, then in terms of population distribution, the early industrial revolution modified existing patterns. The previously dispersed distributions related to the lack of specific locational requirements of the domestic textile industry were altered by the need for point locations at power sources for the new watered powered industry. Population distribution at the local scale thus became focussed on the valleys - in Rossendale the Darwen and the Irwell; in Haut Beaujolais the Reins and the Trambouze.

Rural industry, like all economic systems, produced its own distinctive contribution to the cultural landscapes of Rossendale and Haut Beaujolais, in its settlement patterns. Both regions are thickly studded with small nucleations - clusters of cottages and farmsteads - which survive today. The small hamlet, with both industrial and agricultural functions may well be the classic type of settlement associated with rural industry in Western Europe. Certainly rural industry has had an important and enduring influence on settlement patterns throughout Western Europe, and offers a major field for research by settlement geographers in the future.

What relationship is there between rural industry and the environment? This is a key question of geographical interest because it appears that rural industry was attracted to areas of low agricultural potential. These areas might be naturally infertile such as the sandy areas of Flanders and the Netherlands, or else be upland areas

such as Rossendale and Haut Beaujolais. This automatically provokes the question why only comparatively few regions with impoverished agricultural resources developed rural industry. The answer appears to be that development only took place when there was proximity of some commercial node - an organizational centre with entrepreneurs and capitalists willing to invest in industry. Thus rural industry seems to depend on the spatial coincidence of surplus labour, capital and entrepreneurs. The introduction of rural industry into any region results in an expansion of the economic base of the local economy. As we have seen, these economic opportunities foster population growth. While the major economic system remains stable, growth continues, until the first major crisis - the development of water powered textile machinery. The significance of this change in Rossendale and Haut Beaujolais was slight: both regions were involved in rural industry because they <u>were</u> upland areas, and as such possessed adequate falls of water and sites for water powered industry. The major discontinuity came with the development of the steam engine. The enormous costs of transfering coal overland made location on the coalfield imperative. Any region not directly located on a coalfield was therefore severely handicapped. In Rossendale local supplies of coal were available in the townships of Newchurch, Over Darwen, Ecclesshill, Tockholes and Yate and Pickup Bank. The result was a great expansion in the scale of industrial operations, again emphasising continuity. Haut Beaujolais on the other hand, was never able to fully accommodate this development; though steam powered industry did establish itself in the region the scale of development was limited by the region's relative isolation from the coal basins of the Massif Central. In Rossendale, the rapid expansion of steam powered industry stimulated in-migration into the valley townships. This migratory movement was short-distance in nature and indeed can be seen largely

as a redistribution of population in East and Central Lancastria. Again continuity within the regional system is apparent. By comparison, the relative stagnation of the textile industry in Haut Beaujolais in the later 19th century predictably stimulated little long-distance in-migration, change taking place within the existing regional system to a greater extent than in Rossendale.

If Rossendale enjoyed economic prosperity for most of the 19th century, then by the early 1920's the region was beginning to show the characteristics of a declining industrial area. The region has never recovered the prosperity of the 19th century, though the signs of that prosperity are everywhere in the narrow, congested valleys of the region. Rossendale is a good example of Victorian industrial specialization, which today causes problems of high unemployment, out-migration and urban decay. However, away from the valleys, the settlements of the domestic textile industry on the exposed uplands remain largely unchanged. As a 'Grey Area' Rossendale does not qualify for the financial assistance received by other regions of 19th century industrial specialization such as North-East England and South Wales, though a major hope must lie in the development of the Central Lancashire New Town, in providing a growth pole sufficiently close to have a favourable impact on the region. The situation in contemporary Haut Beaujolais is not dissimilar, though there the environment has not suffered to the same extent. Industry remains concentrated in the valleys, and the small textile towns have a depressingly narrow economic base. The main attraction of the region remains its pool of surplus labour, hence the importance of expanding the tertiary sector and reducing the present emigration of young people. The region is now classified in Zone II for regional planning purposes though the Lyon-Atlantique motorway is to pass through St Étienne and not through the region.

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Appendix

DDX/118/49.
"Admittance in the Court of the Manor of Accrington New Hold Thomas Kay of Burnley, cotton manufacturer, to a newly erected mill called Long Holme Mill with reservoirs, waters and falls of water in Deadwen Clough, with 7 closes, one barn and other buildings and two newly erected dwelling houses near the mill." 25 October 1810.

DDX/118/16.
"Lease for 99 years James Haworth, physician, to Richard Hoyle of Clough Fold, woollen manufacturer....the falls of water on the River Irwell belonging to a close called the Great Holme at Newhallhey. Annual rent £14-13-4." 17 April 1812.

DDX/118/1.
John and Robert Holden lease Slidings Mill (Musbury) at a rent of £90 per annum, together with a complete set of machinery viz: two engines, one drawing frame, two slubbing frames, a number of bobbins, one billy, four batting frames, two stoves and pipes, three hundred spindles and all the water gear - to Thomas Worswick and James Schofield. Term of lease is seven years during which period the leasees required to maintain water wheels, dams, gates and sluices, weirs, water courses etc. 1 February 1806.

DDX/118/41.
Lease for seven years. John Houghton of Flaxmoss, gent, and John Livesey of Bridgend near Flaxmoss, fulling miller, a mill farm, and tenement at Snighole (Musbury). Annual Rent £140.
25 January 1799.

DDX/118/65.
James Law lets two-thirds of a plot of land to Henry Hargreaves to build an engine manufactory or fulling mill and fixing a lodge for water and other necessaries situated in Flaxmoss in a close called the Little Holme and lying on the east side of the rivulet called Holden Brook, with liberty and use of the water and liberty to carry the water down the Holme called Cowholme to the place of the intended erection. The said closes and rivulets are now the occupation of John and Henry Hoyle as tenants to James Law. Part of the agreement of the parties is that thry shall have an equal interest in the plot of land and premises. After the building of weirs, dams, lodges for providing water for the engines and other necessities, profits to be the joint property of all parties. If the mill ceases working for more than 12 months then payments automatically stop.
13 April 1785.

DDX/118/105.
Agreement relating to Hollow Field 393 yards^2. All that building situated on this land - a cotton mill having been erected at the expense of Robert Priestly, John Priestly and Christopher Priestly, together with a lodge, with liberty at all times hereafter to turn the water running into Balladen Brook down the Head Goit supplying the Bleach Works and premises above the said mill, which is to flow from the Bleach Works into the said lodge. Lower Clowes 1827.

TABLE 1.

In-Migration into Urban Townships in Rossendale 1851.
(Place of Birth by County outside Lancashire and Yorkshire).

Class		Popn (1000's)	Distance (Kms)	Migration	P(d^{-1})	Observ-ed Rank	Expect-ed Rank	Devi-ation
	Ireland			1014				
B	Cheshire	338.1	60	118	563	1	1	00
	Scotland			103				
A	Suffolk	299.6	300	74	099	2	19	17
B	Derbyshire	239.8	102	65	234	3	4	-01
B	Westmorland	55.7	62	60	91	4	22	-18
B	Cumberland	171.6	120	39	143	5	12	-07
A	Norfolk	394.5	256	34	154	6	10	-04
	London			27				
	Wales			26				
A	Buckingham	148.6	240	22	062	8	27	-21
B	Somerset	408.7	285	20	139	9	13	-04
C	Stafford	415.1	115	27	361	7	02	+05
C	Warwicks	340.4	135	20	252	10	03	+07
B	Nottingham	227.8	124	15	183	11	08	+03
C	Gloucester	391.3	170	13	230	12	05	+07
C	Kent	484.5	340	13	113	13	17	-04
B	Shropshire	225.4	115	11	196	14	06	+08
A	Essex	321.0	300	10	107	15	18	-03
C	Middlesex			10				
A	Oxfordshire	153.9	240	10	64	16	26	-10
B	Devonshire	499.9	350	9	143	17	11	+08
B	Worcester	213.7	155	8	137	18	14	+04
B	Cornwall	304.3	420	6	72	19	25	-06
C	Durham	256.7	135	6	190	20	07	+13
B	Hampshire	317.8	330	6	96	21	20	+01
A	Lincolnshire	321.0	115	6	279	22	02	+20
C	Northumberland	225.4	165	6	135	23	15	+08
B	Leicester	199.2	150	5	133	24	16	+08
A	Cambri'g shire	145.6	242	4	60	25	28	-03
A	Berkshire	147.0	255	3	57	26	31	-05
B	Dorset	161.0	330	3	49	27	32	-05
C	Surrey	491.8	300	3	164	28	09	+19
A	Sussex	275.4	360	3	76	29	24	+05
A	Wiltshire	242.8	300	2	81	30	23	+07
A	Hereford	112.5	195	1	58	31	29	+02
A	Hertfordshire	144.9	250	1	58	32	30	+02
B	Norfhampton	181.3	195	1	93	33	21	+12

Key: A = Agricultural

B = Mixed

C = Industrial

after Deane and Cole 1962 op.cit. pp 108-9.

TABLE 2.

Population Totals: Haut Beaujolais 1805-1891.

	1805	1811	1836	1851	1866	1872	1891
Affoux	452	573	596	661	574	-	460
Amplepuis	3446	3690	4881	4963	6640	-	6784
Ancy	659	904	959	972	881	839	724
Bourg de Thizy	1055	1806	1805	2122	2201	2251	4401
Chapelle de Mard'e	312	377	667	682	640	606	514
Cours	1981	2107	3985	4688	6062	6495	6690
Darieze	235	340	505	478	482	461	375
Dieme	239	421	447	375	374	394	301
Joux	1179	1179	1394	1421	1431	1338	1001
Les Olmes	295	308	460	539	594	595	578
Les Sauvages	575	713	754	810	786	778	635
Mardore	1481	1697	2239	2600	2618	2587	-
Marnand	956	1115	1092	1155	1103	1102	1148
Ronno	1236	1369	1956	1943	1776	-	1394
St Apollinaire	264	315	454	1034?	434	422	379
St Forgeux	1527	1390	2063	2173	2136	2060	1837
St Clement	719	843	982	1037	1028	984	907
St Marcel	521	559	649	622	753	746	616
St Romain	828	1204	1596	1602	1550	1545	1424
Tarare	2174	4700	7762	10280	15092	13694	11817
Thizy	904	1034	1611	2678	2928	3040	4803
Valsonne	1181	1081	1519	1441	1424	1360	1218

TABLE 3.

Population Totals: Rossendale 1801-61.

	1801	1811	1821	1831	1841	1851	1861
Cowpe, Lench etc.	676	786	1224	1519	1716	2154	2851
Dunnockshaw	-	63	76	46	41	86	167
Eccleshill	346	374	456	715	510	598	543
Haslingden	4040	5127	6595	7776	8063	9030	10109
Henheads	122	195	246	202	176	160	211
Higher Booths	1661	2568	3172	4347	3652	3827	5131
Lower Booths	934	1178	1513	2178	2464	3778	4655
Lower Darwen	1646	1805	2238	2667	3077	3521	3301
Musbury	463	589	728	1231	1386	1228	997
Newchurch	5046	6930	8557	9196	11668	16915	24413
Over Darwen	3587	4411	6711	6972	9348	11702	16492
Tockholes	758	1077	1269	1124	1023	934	820
Yate and Pickup Bk	1045	1230	1359	1209	1068	1208	1111

TABLE 4.

Occupational Structure: Rossendale 1851.

The data shown in table 4 were derived from a systematic sample of the Enumerators' Schedules (H.O.107). The sampling fraction varies according to the size of the population thus: Cowpe, Lench, Newhallhey 20%; Dunnockshaw 100%; Eccleshill 50%; Haslingden 10%; Henheads 100%; Higher Booths 20%; Lower Booths 20%; Lower Darwen 20%; Musbury 30%; Newchurch 10%; Over Darwen 10%; Tockholes 30%; Yate and Pickup Bank 30%.

	Haslingden		Dunnock'w		Eccleshill		Cowpe/Lench/NHH	
	M	F	M	F	M	F	M	F
PLW	17	18	3	2	18	23	14	10
HLW	16	9	1		23	15	1	
Weaver	31	31	2	1			3	5
Spinner	6	4	1	1	1	8	8	6
Carder	7	9	1				7	1
Mfr.	3		1		1			
Printer	1		2				5	
Other Tex.	47	34	3		2	4	18	7
Farmer	13	1	2	1	12		3	1
Labourer	6	2	6		6		1	
Services	38	22	2	2	2	2	6	5
Others	58	12	2		26*	3	22	1
	243	142	26	7	91	55	88	36

	Henheads		Higher Booths		Lower Booths		Lower Darwen	
	M	F	M	F	M	F	M	F
PLW	4	9	7	15	26	41	19	38
HLW	2		6	1	8	2	9	3
Weaver	1		3	8	3	5	9	10
Spinner	1	5	3	4	4	12	6	9
Carder			3	4	2		6	2
Mfr			2		2			
Printer	2		46	15	5		2	
Other Tex.	6	5	7		36	13	19	10
Farmer	14		6	2	6	1	8	
Labourer	3		12	1	5		19	1
Services	1	4	15	13	7	12	2	12
Others	19	1	36	9	34	10	28	
	53	24	146	72	138	99	117	85

	Musbury		Newchurch		Tockholes		Yate & Pickup	
	M	F	M	F	M	F	M	F
PLW	13	31	40	51	22	28	43	34
HLW	9	4	16	9	43	33	23	23
Weaver	7	12	92	89		3	4	5
Spinner	18	3	24	43		4	5	15
Carder	2		15	7	1		3	2
Mfr			13		2			
Printer			5	1				
Other Tex.	69	33	119	63	5	1	7	4
Farmer	14	1	20	1	26	2	19	1
Labourer	11		22	3	19		18	
Services	4	7	52	44	7	7	3	5
Others	11		155	23	21*		27*	2
	158	91	574	328	146	78	152	91

* Principal occupations coal mining and quarrying.

Similar data for the township of Over Darwen 1851 (male first, female second) are: 72, 105; 15, 7; 26, 36; 9, 19; 7, 2; 7, 2; 33, 14; 12, 1; 16, 0; 36, 25; 156, 16.

Table 5 Occupational Structure: Haut Beaujolais 1872.

	Thizy		B de Thizy		Mardore		Marnand	
	M	F	M	F	M	F	M	F
Tisserand	41	12	44	32	67	12	41	20
Bobineuse		1		4				
Fabricant	6	2			3		2	
Cardier	1							
Mouselleinier								
Autres Tex.	8	40	8	3		1		1
Agriculteur	4	1	20	1	20	2	23	8
Journalier	7		6		4	1		
Services	34	17	16	4	15	18	7	4
Autres	63	14	11	5	10	8	6	3
Fileur			2		1			
	164	87	107	49	120	42	79	36
	Cours		St Jean		Chapelle		La Ville	
	M	F	M	F	M	F	M	F
Tisserand	60	6	34	10	19	4	48	31
Bobineuse								4
Fabricant			2		1		1	
Cardier	17	1						
Mouselleinier								
Autres Tex.	1	1	2				8	2
Agriculteur	21		28	1	9		20	
Journalier	3		4		2		4	
Services	18	7	7	2	1	3	5	5
Autres	15	1	6	3			7	6
Fileur	15	3				1		
	150	19	83	16	32	8	93	48

Sampling fractions: Amplepuis 1836 - 20%; Bourg de Thizy 1836/1872 -20%; Affoux 1836 - 30%; La Chapelle 30% 1836/1872; Cours 10%; 1836/1872; Joux 1836 - 20%; La Ville 1872 - 30%; Mardore 20% 1836/1872; Marnand 20% 1836/72; St Clement 1836 - 30%; St Jean 20% 1836/1872; Thizy 20% 1836/72.

Table 6 Occupational Structure: Haut Beaujolais 1836.

	Affoux		Amplepuis		Bourg		Cours		Joux	
	M	F	M	F	M	F	M	F	M	F
Tisserand			85	23	69	39	26	7	1	
Bobineuse				4						27
Fabricant			3	1	4		2	1		
Cardier										
Mouselleinier	6		4	2					27	4
Autres Tex.			7	6	2		10		1	4
Agriculteur	70	1	17	1	16	4	1		38	1
Journalier			6	1	3	1	7		4	1
Services	8	7	13	9	11	11	15	17	10	8
Autres	1		8		7		4		4	4
Fileur							10	11		
	85	8	145	47	112	55	75	36	85	49

(continued overleaf)

Table 7 Farm Size Distribution: Haslingden 1798.

Size Classes: (acres)	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45+
Number:	22	36	16	12	6	5	4	2	1	2

Table 8 Farm Size Distribution: Haut Beaujolais 1862.

Size Classes: (ha)	-5	5-9	10-19	20-29	30-39	40-49	50-59	60-79	80-99	100+
Amplepuis	26	10	6	6	7	8	4	6	5	
Bourg de T.	25	10	12	5	8			1	2	
La Chapelle	14	8	3	1	3		1	1		
Cours	200	15								
Cublize	207	40	16	6	6	3	2	2		1
Mardore	122	65	6	3	2	2	1			
Marnand	68	7	6	3	1	1				
St Jean	35	38	18	7		4	1			
Thizy			5							

Table 9 Occupational Structure: Beaujolais 1851.

	Agriculture	Industry	Others
Dracé	93	1	6
St Lager	84	14	2
Joux	84	15	1
St Clement-sur-V.	51	48	1
St Georges-des-R.	50	29	21
La Chapelle	42	54	4
Marnand	35	64	1
Bourg de Thizy	29	62	9
St Jean-la-Bussière	29	70	1
Cublize	27	68	5
Cours	20	79	1
Mardore	16	80	4
Amplepuis	15	82	3
Tarare	14	67	17
Thizy	2	82	16

Table 10 Occupational Structure: Rossendale 1851.

	Agriculture	Textiles	Others
Tockholes	23.7	60.2	16.1
Henheads	22.1	45.4	32.5
Dunnockshaw	20.6	61.8	17.6
Eccleshill	14.9	60.9	24.2
Yate and Pickup	12.9	69.1	19.0
Musbury	12.4	80.0	7.6
Lower Darwen	10.0	70.0	20.0
Higher Booths	9.6	56.9	33.5
Haslingden	5.7	60.6	33.7
Newchurch	5.2	64.4	30.4
Lower Booths	5.1	68.6	26.3
Cowpe, Lench etc.	4.0	70.2	25.8
Over Darwen	4.0	57.7	38.3

Table 6 continued.

	Mardore		Marnand		St Clement		St Jean		Thizy	
	M	F	M	F	M	F	M	F	M	F
Tisserand	41	56	37	16	12	1	32	1	7	
Bobineuse				6		12				
Fabricant	5		7				5		7	
Cardier	4	3								
Mouselleinier					19	6				
Autres Tex.		1	4	3	1	2		6	5	
Agriculteur	18	1	4		38	22	12			
Journalier	3		2	1		22	3		5	1
Services	10	4	6	11	10	8	8	7	16	8
Autres	9	1	6	6	9		6	12	16	2
Fileur	38	77					4			
	128	143	66	43	89	72	70	26	56	11

Table 6A Occupational Structure: Haut Beaujolais 1836 (percent).

	Agriculture	Textiles	Others
Affoux	76	6	18
Amplepuis	13	71	16
Bourg de Thizy	14	68	18
Cours	6	53	41
Joux	33	48	19
Mardore	8	83	9
Marnand	6	71	23
St Clement	52	32	16
St Jean	36	44	20
Thizy	9	29	62

Table 6B Occupational Structure: Haut Beaujolais 1872 (percent).

	Agriculture	Textiles	Others
Bourg de Thizy	17	60	23
Cours	14	62	24
Mardore	16	52	32
La Chapelle	28	62	10
Marnand	27	55	18
St Jean	34	48	18
La Ville	12	67	11
Thizy	4	44	52

Notes on Maps and Diagrams Compiled from Original Sources.

Fig. 1.4a Haut Beaujolais: Topography and Drainage: based on the following sheets of French 1:50,000 series: Beaujeu XXIX (1964), Amplepuis XXIX (1959), Roanne XXX (1959), Tarare XXXI (1964).

Fig. 1.5 Rossendale: Geology and Topography: geological map based on published drift geology map for the region. Relief map based on 1: 62,000 O.S. map sheet 95.

Fig. 2.1a Distribution of Muslin Industry: Tarare 1819: compiled from the "Rapport sur la fabrique de Mouseline et le Commerce de Tarare 1819" located in series M of departmental archives of Rhône.

Fig. 2.1b Central Lancashire: Occupational Structure c 1720: the data were abstracted from parish register sources including the Bishop's Transcripts of the Diocese of Chester, the publications of the Lancashire Parish Register Society and the original registers (see bibiography).

Fig. 2.2 Distribution of Domestic Textile Industry: Beaujolais 1862: based on data contained in the "Enquête Agricole" for the departement of the Rhône 1862.

Figs. 2.3a and 2.3b Origins of Country Manufacturers Attending the Manchester Market 1788 and 1813: compiled from the following sources: Lewis's "Directory for the Towns of Manchester and Salford 1788", and Pigot's "Manchester and Salford Directory for 1813."

Fig. 2.4 Structure of Textile Industry: Cantons of Thizy, Tarare and Amplepuis 1880: compiled from "Situation Industrielles" 1880-81 for the arrondissement of Villefranche.

Figs. 3.1 and 3.2 18th Century Population Growth in Selected Parishes of Beaujolais: compiled from original parish register documents located in the Rhône departmental archives. Both crude data and 9 year running means depicted (the last suggested by the Cambridge Group of Population Study).

Fig. 3.3 Population Growth : Beaujolais 1793-c 1820: based on data abstracted from the état civil for the respective communes.

Figs. 3.4 and 3.5 18th Century Population Growth: Selected Parishes in East and Central Lancastria: these graphs compiled from several sources and the data depicted in same way as those in figs. 3.1 and 3.2. For full details see bibliography.

Fig. 3.7 The Demographic System: an attempt by the writer to show in simple schematic form the principal components and relationships in the demographic system.

Fig. 4.1 Population Change: Beaujolais (arrondissement of Villefranche) 1801-1841: based on population totals by commune from the censuses of 1801 and 1841.

Fig. 4.2 Population Change: Central Lancashire 1801-31: simple choropleth map based on census returns by township of 1801 and 1831 censuses of England and Wales.

Fig. 4.3 Rural Population Change 1801-51: diagrams compiled from population totals from printed returns of 1801/11/21/31/41/51 censuses.

Fig. 5.1a Age-Sex Structure: Rossendale 1821: compiled from printed age-sex structure returns of the 1821 census.
Fig. 5.1b Distribution of Population:Rossendale 1810: dot distribution map compiled from the Militia List for Rossendale 1810, located in the Rawtenstall Public Library. Each dot represents one male aged 18-45. Clearly the numbers listed are only a small fraction of the total males in this age class in the region, though nonetheless give a good general picture of population distribution at this date.

Fig. 5.2 Age-Sex Structure: Haut Beaujolais 1836: compiled from a sample of the manuscript returns of the 1836 census for the cantons of Thizy and Tarare (for precise details see appendix).

Fig. 5.3 Density of Population: Central Lancashire 1801: compiled from 1801 census returns of population totals and areas of individual townships.

Fig. 5.4 Density of Population: Beaujolais 1801: population data obtained from 1801 census while data relating to areas of communes was taken from the "Almanach de la Ville de Lyon et du Département du Rhône." 1806.

Fig. 5.5a Harwood Fold 1843: source - Eccleshill Tithe Map of 1843 located in L.R.O.
Fig. 5.5b Lorenz Curves: Blackburn and Whalley 1801-31; Villefranche 1801-41: compiled from same sources as figs. 5.3 and 5.4.

Fig. 5.6 Distribution of Settlement: Canton of Thizy 1812: based on the Cadastral Survey of the Canton of Thizy 1812-13 (3PL 552/53). In Archives du Dept. Rhône.

Fig. 5.7 Distribution of Settlement: Rossendale 1794: the spatial patterns of settlement in Rossendale depicted at the vital period before the onset of the industrial revolution. Based on Yates's map (see bibliography).

Figs. 5.8a and 5.8b Density of Population: Haslingden 1683-93/1770-74: there are no maps for the region which cover these early periods. These figures and fig. 5.9c are an attempt to reconstruct the relative spatial patterns of population density using baptismal material from parish registers as the basic source of data. Number of baptisms are related to area and plotted on a grid surface after a method suggested by Cole and King 1968 op.cit. p 204. From these data a simple isopleth map can be constructed.

Fig. 5.9a Density of Population: Rossendale 1662: the density pattern at this relatively early date is based on the number of copyholders in each township or vaccary. These data are contained in W.Farrar: "The Court Rolls of the Honor of Clitheroe" Vol III 1913.
Fig. 5.9b Density of Population: Rossendale 1810: the same source of data as in fig. 5.1b, only presented in choropleth form. The areal units are the original vaccaries of the Forest and enable the density pattern to be reconstructed in finer detail than is possible using the fairly coarse units of the townships as in censal material.
Fig. 5.9c Density of Population: East Rossendale 1696-1722: compiled on same basis as figs. 5.8a and 5.8b utilizing baptismal data and information on place of dwelling from parish registers.

Fig. 5.10 Rural Settlement: Haut Beaujolais 1812: a sample of typical hamlets associated with agriculture and the domestic textile industry. Data source: the Cadastral Survey 1812-13 (see bibliography).

Fig. 5.11 Village Settlement: Haut Beaujolais 1812: these maps based on the Cadastral Survey 1812-13 show something of the variety of form assumed by the 'bourgs' - the principal nucleation in each commune.

Fig. 5.12 Eccleshill Fold: based on the Tithe Map of 1843 for the township of Eccleshill. The map shows the small rural-industrial hamlet of Eccleshill Fold and the distribution of land holdings in relation to the three centrally located farms. The overwhelming proportion of land is under grass.

Fig. 5.13: Rural Settlement: Rossendale c 1840: typical rural-industrial hamlets in some of the more marginal areas of Rossendale. The map which includes Sharrock Fold and Quaker Fold is based on the first publication of the 6" O.S. map (1845); the other maps are based on the Tithe Map for Cowpe, Lench and Newhallhey (1839).

Fig. 5.14 Enclosure of Oswaldtwistle Moor 1776: based on enclosure map of that date (see bibliography). This map should be compared with fig. 5.15 in order to see the pattern of colonization of previously unsettled areas.

Fig. 5.15 Oswaldtwistle Moor 1845: based on first edition of 6" O.S. map for Rossendale.

Fig. 5.16b Enclosure of Lower Darwen Moor 1779: based on the enclosure map of that date (see bibliography).
Fig. 5.16a Lower Darwen Moor c 1845: as fig. 5.15.

Fig. 5.17a Enclosure of Edgeworth Moor 1796: based on enclosure map of that date (see bibliography).
Fig. 5.17b Edgeworth Moor 1850: as fig. 5.15 (O.S. map for Edgeworth published slightly later than at either Oswaldtwistle or Lower Darwen.

Fig. 5.18 Population Growth and Economic Change: an attempt by the writer to produce his own model which shows the interaction between the two principal components of this thesis - population and economic change. A good deal of the model is hypothetical and applies specifically to Rossendale and Beaujolais. Its relevance to other regions remains to be tested.

Fig. 7.1 Population Change: Beaujolais 1841-72: this map clearly shows the extremely low rates of population growth in the province in the middle decades of the 19th century. Population totals by commune are taken from the censuses of 1841 and 1872.

Fig. 7.2 Population Growth: Central Lancashire 1831-51: the corresponding map to fig. 7.1 for Lancashire. The dramatic decreases in rates of population growth are evident in comparison with fig. 4.2. Source - 1831 and 1851 censuses for population totals by township.

Fig. 7.3 Changing Age-Sex Structure 1836-51: these changes illustrated by triangular graphs. The 1836 data are a sample of the manuscript returns of the 1836 census: the 1851 data are full enumerations.

Fig. 7.4 Age-Sex Structure: Haut Beaujolais 1851-72: age-sex pyramids in selected communes 1851-72. The 1851 data are full enumerations: the 1872 data are derived from systematic sampling - see bibliography.

Fig. 7.5 Age-Sex Structure: Haut Beaujolais 1851-72: as fig. 7.4.

Fig. 7.6 Age-Sex Structure: Lancashire 1851: complete enumerations compiled from material published in 1851 census. However, units are Registration Districts and not smaller townships.

Fig. 7.7 Density of Population: Beaujolais c 1840: source - 1841 census: population totals by commune related to area of commune.

Fig. 7.8 Density of Population: Central Lancashire 1831: the year 1831 chosen in preference to 1841 or 1851 because it marks the end of the economic viability of the domestic textile industry. Thereafter density of population in many rural areas of eastern Lancastria began to lose large numbers of people to the manufacturing districts which stand out clearly on this map. Source - 1831 censal data of population totals by township.

Fig. 8.1 Distribution of Settlement: Canton of Thizy 1844: based on Rembielinski's map "Carte Topographique du Canton de Thizy" see bibliography.

Fig. 8.2 Distribution of Settlement: Haut Beaujolais 1880: based on the 1:50,000 "Carte Topographique du Rhône" pub. 1885.

Fig. 8.3 Distribution of Settlement: Rossendale 1815: the distribution of settlement in the early years of the industrial revolution. Compiled from Greenwood's County Map of Lancashire 1818.

Abbreviations

Agr. Hist.	Agricultural History
Amat. Hist.	Amateur Historian
A.A.A.G.	Annales of the Association of American
Annales de Geogr.	Annales de Geographie (Geographers.
Econ. Hist.	Economic History
Econ. Hist. Rev.	Economic History Review
Eng. Hist. Rev.	English History Review
I.B.G.	Transactions of the Institute of Brit-
Jrnl Manchester Geog. Soc.	(-ish Geographers
L.R.O.	Lancashire Record Office
P.R.O.	Public Record Office
Rev. de. Geogr. de Lyon.	Revue de Geographie de Lyon
Trans.Hist.Soc.Lancs & Ches.	Transactions of the Historical Society
Trans.Lancs & Ches.Ant.Soc.	(of Lancashire & Cheshire.
	Transactions of the Lancashire & Cheshire Antiquarian Society.

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Census Manuscripts 1851: Bourg de Thizy, Chapelle de Mardore, Affoux, Cours, Drace, Joux, Mardore, Marnand, St Clement-sur-Valsonne, St Georges-des-Reneins, St Jean-la-Bussière, St Lager, Cublize, Thizy, Tarare.

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